Date:

6 December 2001

To:

Bechtel Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project: 200 Area Source Characterization 200-CS-1 Operable Unit - Waste

Management

Subject: Semivolatile - Data Package No. H1568-LLI (SDG No. H1568)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1568-LLI prepared by Lionville Laboratory, Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B13C81	10/30/01	Soil	С	Semivolatiles by 8270C

Data validation was conducted in accordance with the BHI validation statement of work and the Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, BHI-01562, Rev. 0, October 2001. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times



EDMC

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Water samples must be extracted within 7 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the project quantitation limit (PQL) and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the PQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

Accuracy

Matrix Spike/Matrix Spike Duplicate Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All MS/MSD results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the PQL are qualified as estimates and flagged "J". Sample results less than the PQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the PQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate recoveries were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-35%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001 PQLs to ensure that laboratory detection levels meet the required criteria. All undetected analytes exceeded the PQL with the exception of tributylphosphate. Under the BHI statement of work, no qualification is required.

Completeness

Data package No. H1568-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

All undetected analytes exceeded the PQL with the exception of tributylphosphate. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001.

Giossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1568	REVIEWER: TLI	DATE: 12/6/01	PAGE_1_OF_1_
COMMENTS: No qualifiers	assigned.		

Qualified Data Summary and Annotated Laboratory Reports

Page__1_ of__2_

Project: BECHTEL-HANFORD															
Laboratory: LLI]		•									
Case:	SDG: H	1568													
Sample Number		B13C81													
Remarks															
Sample Date		10/30/01													
Extraction Date		11/5/01		·											
Analysis Date		11/16/01													
Semivolatile (8270C)	CROL	Result	Q	Result	Q	Result	ø	Result	Q	Result	a	Result	Q	Result	Q
Phenol	330														
bis(2-Chloroethyi)ether	330	400				-									
2-Chlorophenol	330	400	U												
1,3-Dichiorobenzene	330	400	U												
1,4-Dichlorobenzene	330	400	U												
1,2-Dichiorobenzene	330	400													
2-Methylphenol	330	400	U			1									
2,2-Oxybis(1-chloropropane)	330	400	υ												
4-Methylphenol	330	400	U												
N-Nitroso-di-n-propylamine	330	400	U												
Hexachloroethane	330	400													
Nitrobenzene	330	400									·				
Isophorone	330	400				,				}					
2-Nitrophenol	660	400							<u> </u>						
2,4-Dimethylphenol	330	400													
bis(2-Chloroethoxy)methane	330	400													
2,4-Dichlorophenol	330	400													
1,2,4-Trichlorobenzene	330	400						<u> </u>	L				<u> </u>		
Naphthalene	330	400													
4-Chloroaniline	330	400						<u>i</u>							
Hexachlorobutadiene	330	400						<u> </u>							Щ
4-Chloro-3-methylphenol	330	400													
2-Methylnaphthalene	330	400									<u> </u>				
Hexachlorocyolopentadiene	330	400						<u>.</u> .							
2,4,6-Trichlorophenol	330	400													
2,4,5-Trichlorophenol	330	1000													
2-Chloronaphthalene	330	400													
2-Nitroeniline	330	1000													
Dimethylphthalate	330	400	U												
Acenaphthylene	330	400	U												
2,6-Dinitrotoluene	330	400	U												

Project: BECHTEL-HANFORD				7											
Laboratory: LLI				1											
Case:	SDG: H	1568		1											
Sample Number		B13C81					•								
Remarks						1									
Sample Date		10/30/01													
Extraction Date		11/5/01													
Analysis Date		11/16/01													
Semivolatile (8270C)	CRQL	Result	a	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	330														
Acenaphthene	330	400							1				<u> </u>		
2,4-Dinitrophenol	825	1000								1					
4-Nitrophenol	660	1000								1		<u> </u>	1		_
Dibenzofuran	330	400									ـــــ			1	
2,4-Dinitrotoluens	330	400			1				<u> </u>	<u> </u>	<u> </u>				
Diethylphthalate	330	400							┷	<u> </u>	ļ		<u> </u>		_
4-Chlorophenyl-phenyl ether	330	400							<u> </u>	<u> </u>		ļ	<u> </u>		1
Fluorene*	330	400			_		<u> </u>						_		1
4-Nitroaniline	330	1000				<u> </u>					ļ	<u> </u>			
4,6-Dinitro-2-methylphenoi	330	1000									ļ		↓		4
N-Nitrosodiphenylamine	330	400				<u> </u>	_		_		<u> </u>		ļ		4
4-Bromophenyi-phenyi ether	330	400			ļ	`					<u> </u>		<u> </u>		4—
Hexachlorobenzene	330	400							↓		 		ļ		4
Pentachiorophenol	330	1000						<u> </u>	╀		<u> </u>		ـــــــ		4
Phenanthrene	330	150						<u>.</u>	_		<u> </u>		1		4—4
Anthracene	330	400									 		↓		1
Carbazole	330	400	U			<u> </u>		ļ	 		 		1	_	
Di-n-butylphthalate	330	220							1	<u> </u>	 		 	ļ	4
Fluoranthene	330	120							↓	ļ	1		 		+
Pyrene + A21	330	99			↓		_		 	ļ			╄		4
Butylbenzylphthalate	330	400			-				1	<u> </u>	 		ļ	<u> </u>	
3,3'-Dichlorobenzidine	330	400	U	 	1	ļ		<u> </u>	-	ļ .	-		 		4
Benzo(a)anthracene	330	34			—				_		╀		├		1
Chrysene	330	40	L		₩				+	<u> </u>				<u> </u>	+
bis(2-Ethylhexyl)phthalate	330	400			<u> </u>	ļ			╄	<u> </u>	ļ		-	*	↓
Di-n-ootyiphthalate	330	400	ν_		↓		_	<u> </u>	-		 		—	<u> </u>	↓
Benzo(b)fluoranthene	330	37			—	ļ			₩				╂		+
Benzo(k)fluoranthene	330	400	U_		-			 	-		ļ	ļ	 	<u> </u>	$+\!-\!\!\!\!+$
Benzo(a)pyrene	330	22	<u> </u>		_		4	 	-		ļ	 	 	 	+
Indeno(1,2,3-od)pyrene	330					 		1	+-				 	<u> </u>	4
Dibenz(a,h)anthracene	330	400			-			ļ	—		<u> </u>		 	<u> </u>	—┤
Benzo(g,h,i)perylene	330	400			┼			-	1		-		1		+
Tributylphosphate	3300	400	U	<u></u>					1	<u> </u>	<u> </u>	<u> </u>		<u> </u>	

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Work Order: 11343606001 Client: TNU-HAMFORD B02-008 RFW Batch Number: 0111L256 SBLKJD SBLKJD BS B13CK9 B13CK9 **B13CK9** B13CB1 Cust ID: 01LE1329-MB1 01LE1329-MB1 002 002 MS 002 MSD 001 RFW#: Sample SOIL SOIL SOIL SOIL SOIL SOIL Matrix: Information 5.00 1.00 1.00 5.00 1.00 5.00 D.F.: ua/Ka uq/Kq ug/Kg ug/Ka ug/Kg Units: uq/Kq * 93 Ł 114 ¥ 85 ł 86 1 94 ł Nitrobenzene-d5 86 ł 98 * 87 ŧ 99 1 ŧ 99 76 ł 98 2-Fluorobiphenyl Surrogate * 123 ¥ 134 ł 105 ł 101 ¥ ł 115 p-Terphenyl-d14 103 Recovery 77 90 ł 107 73 88 ł 73 Phenol-d5 ŧ 72 ¥ 90 97 Ł ł 70 ŧ 69 81 2-Fluorophenol * 89 * 112 ¥ 55 52 66 ł 2,4,6-Tribromophenol 75 -----fl----74 U 92 * ŧ 330 2600 U 71 * 400 П Phenol n 2600 IJ 330 u 330 U m 2600 bis(2-Chloroethyl)ether 400 П 2600 ŧ Ħ 1 П 2600 80 Ł 86 330 97 400 2-Chlorophenol 17 2600 U 330 U 330 U U 2600 Ħ 2600 1.3-Dichlorobenzene 400 * U ł 84 330 80 U 2600 80 Ł 400 1.4-Dichlorobenzene 2600 U Ü U 330 IJ 330 2600 U 2600 1.2-Dichlorobenzene 400 U 2600 Ħ U U 330 330 400 T 2600 2600 U 2-Methylphenol 2600 U 2600 Ħ 330 IJ 330 U 400 U 2600 2.2'-oxybis(1-Chloropropane)___ 13 330 U 330 Ü 2600 U 2600 400 TI 2600 4-Methylphenol 112 330 U 121 ł 104 400 U 2600 N-Nitroso-Di-n-propylamine IJ IJ IJ O 2600 330 330 2600 Hexachloroethane _____ 400 IJ 2600 Ü 2600 U 330 П 330 400 11 2600 2600 Nitrobenzene 2600 2600 Ħ 330 IJ 330 IJ 400 IJ 2600 Isophorone U 330 IJ 330 U U 2600 2600 2600 400 2-Nitrophenol_ 2600 17 330 IJ 330 U 2600 2600 IJ 400 U Ħ 2.4-Dimethylphenol bis (2-Chloroethoxy) methane___ U 2600 2600 U 2600 TT 330 TT 330 Ħ 400 U U 400 U 2600 U 2600 17 2600 330 330 IJ 2,4-Dichlorophenol_ 81 * 330 TŦ 79 ¥ 1,2,4-Trichlorobenzene 400 U 2600 U 75 * 2600 U 2600 Ħ 330 11 330 U 400 U 2600 U Naphthalene IJ П Ħ 400 U 2600 U 2600 IJ 2600 330 330 4-Chloroaniline TT 330 Ħ 400 IJ 2600 Ħ 2600 Ħ 2600 330 Hexachlorobutadiene ŧ 86 ŧ 330 Ħ 104 * Ł 4-Chloro-3-methylphenol 400 U 2600 U 81 2600 U 2600 IJ 330 U 330 U U 2600 IJ 400 2-Methylnaphthalene U IJ U 2600 U 2600 П 330 330 Hexachlorocyclopentadiene____ 400 U 2600 U U U 2600 П 2600 U 330 330 U 2600 2.4.6-Trichlorophenol_ 400 6400 T 830 U 830 U П 6400 U 1000 U 6400 2,4,5-Trichlorophenol *= Outside of BPA CLP QC limits.



Report Date: 11/19/01 13:36

Page: 1a

Cu	st ID:	B13C8		HANFORD B B13CK		B13CK		Order: 1 B13CK		SBLKJD		Page: 1b	
	RFW#:	00	1	00:	. 2	002 M	3	002 MS	D	01LE1329-M	B 1	01LE1329-	- M
0.00.		400		2600									
2-Chloronaphthalene		400		2600		2600		2600		330		330	
2-Nitroaniline		1000		6400		6400	U	6400	Ū	830	Ū	830	
Dimethylphthalate		400	Ü	2600	U 	2600		2600	ŭ	330	Ū	330	
Acenaphthylene		400		2600	Ū	2600		2600	U	330	Ū	330	
2,6-Dinitrotoluene		400		2600	U	2600	U	2600	U	330	U	330	
3-Nitroaniline		1000	Ū	6400	Ü	6400	U	6400	ט	830	Ū	830)
Acenaphthene		400	ប	2600	Ŭ	98	*	100	*	330	U	94	
2,4-Dinitrophenol		1000		6400	Ŭ	6400	Ū	6400	U	830	U	830)
4-Nitrophenol		1000	U	6400	ט	92	ł	85	ł	830	U	105	
Dibenzofuran		400	U	2600	U	2600	Ū	2600	U	330	U	330	
2,4-Dinitrotoluene		400	U.	2600	U	. 83	ŧ	89	ł		Ū	105 '	*
Diethylphthalate		400	U	2600	U	2600	U	2600	U		Ū	330	
Diethylphthalate 4-Chlorophenyl-phenylether_	<u> </u>	400	U	2600	Ü	2600	Ü	2600	U	330	U	330	
Fluorene			บ	2600	Ü	2600	Ŭ	2600	Ŭ		U	330	
4-Nitroaniline			σ	6400	U	6400	U .	6400	U		U	830	
4,6-Dinitro-2-methylphenol		1000	U	6400	U	6400	Ū	6400	U.		Ū	830	
N-Witrosodiphenylamine (1)	····	400		2600	U ·	2600	U	2600	U		U	330	
I-Bromophenyl-phenylether		400	U	2600	U	2600	U	2600	U		U	330	
lexachlorobenzene		400	U	2600	U	2600	U	2600	U	330	U	330	
Pentachiorophenoi		1000	U	6400	U	41	*	45	*	830	U	101	
Phenanthrene		150	J	370	J	250	J	290	J	330	U	330	
Anthracene		400	U	2600	Ū	2600	U	2600		330	U	330	
Carbazole		400	ซ	2600	U	2600	U	2600	U	330	U	330	
oi-n-Butylphthalate		220	J	2700		2600		4800		330	U	20	
?luoranthene		120	J	370	J	290	J	380	J	330	U	330	
yrene		99	J	350	J	92	¥	105	*	330	Ū	114	
Sutylbenzylphthalate		400	Ū	290	J	830	J	420	J	330	Ū	330	
, 3'-Dichlorobenzidine		400	ซ	2600	U	2600	Ū	2600	U	330	U	330	
Benzo (a) anthracene		34	J	180	J	240	J	330	J	330	U	330	
		40	J	210	J	280	J	330	J	330	U	330	
Thrysene ls(2-Ethylhexyl)phthalate		400	Ū	6200		4800		8100		330	U	20	
		400	U	2600	ប	2600	ប	2600	U	330	U	330	
enzo(b) fluoranthene		37	J	240	J	310	J	350	J	330	U	330	
enzo(k) fluoranthene	,	400	U	2600	U	2600	ប	2600	U		U	330	
enzo (a) pyrene		22	J	160		230	J		J		U	330	
ndeno (1,2,3-cd) pyrene	- 6	400	U	2600			U		Ū		U	330	
ibenzo(a,h)anthracene	~~~	400	U	2600		2600	U		U		U	330	
enzo(g,h,i)perylene	<u>c</u>	400	U	2600			U		U	330 1	_	330	
ributylphosphate			U	310		580	_		J	330 1		330	

Laboratory Narrative and Chain-of-Custody Documentation



Client: TNU-HANFORD B02-008

LVL#: 0111L256

SDG/SAF #: H1568, H1571/B02-008

W.O. #: 11343-606-001-9999-00 **Date Received:** 11-02-2001

SEMIVOLATILE

Two (2) soil samples were collected on 10-30,31-2001.

The samples and their associated QC samples were extracted on 11-05-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 11-16-2001.

The following is a summary of the OC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
- 2. Samples were extracted and analyzed within required holding time.
- 3. Non-target compounds were detected in the samples.
- 4. Sample B13CK9 and its associated matrix spike samples required a 5-fold dilution due to high levels of both target and non-target compounds.
- 5. All surrogate recoveries were within EPA OC limits.
- 6. Four (4) of twenty-two (22) blank spike recoveries were outside EPA QC limits.
- 7. All matrix spike recoveries were within EPA QC limits.
- 8. Internal standard area and retention time criteria were met.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

President

Lionville Laboratory Incorporated

som\gorup\data\bne\tnu-hanford-0111-256.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the

analytical data. Therefore, this report should only be reproduced in its entirety of 1 5 par

000015

11/21/01 Date



Lionville Laboratory, Inc. BNA ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008

DATE RECEIVED: 11/02/01 LVL LOT # :0111L256

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
	······································		. —			
B13C81	001	S	01LB1329	10/30/01	11/05/01	11/16/01
B13CK9	002	S	01LB1329	10/31/01	11/05/01	11/16/01
B13CK9	002 MS	S	01LE1329	10/31/01	11/05/01	11/16/01
B13CK9	002 MSD	S	01LE1329	10/31/01	11/05/01	11/16/01
LAB QC:						
						•
SBLKJD	MB1	S	01LB1329	N/A	11/05/01	11/16/01
SBLKJD	MB1 BS	S	01LE1329	N/A	11/05/01	11/16/01
SBLKJD	mbi bsd	s	01LB1329	N/A	11/05/01	11/16/01

Backed Lineford Inc	CHAI	CHAIN OF CIISTODY/SAMPLE ANALYSIS	AS/VOO	MPIE	ANALY		REOUEST	-	B02	B02-008-01	Page 1 of	1
TACLE OF THE PROPERTY OF THE P	Company	afact	Telephone No.	Z.			Project Coordinator	į	900	הארונין (הארונין	Phi (- She Terrerous	1
xmae, G/Wethorn, D	Cearfock, CS	8	372-963			12	TRENT, SI	T	84	ズ	A Chart	
et Designation 1 Ava. Source Characterization 200-CS-1 OU - Waste Monn		cotton t West				SAF Na. B02-008	28	<u>₹</u>	r Quality	_	1500	F 2
NEW COOK	╁	*Na. PILCS!		COA XL2002CHOR	3 0	<u> </u>	Method of Shipes Fod Ex	1	:			
	Na Na Maria Company	Q RAYA	4	Š		3	がある語	A CAT	4/4	1906		
MARCEA STATE HAZARDSPENARKS	\$	TO TO				1						
		Preservation	1	į	Cool At Cool	Coal 4C Coal	Cont. CO.	Ness	Coel 4C Coel	1		
1610 813684	-	Type of Container	0	2	2	8	2	Ç.	Q.	O*		
Samples stored in Roll I Hat the	2	No. of Container(s)	1	-	-	-	_	-	1	1		
74	<u>.l</u>		1000-0	SOOm	1000mg	1000mL	120m[7m09	130mL	120mL		
SAMPLE ANALYSIS	-		100	in i	6 1	i Singal	28 	PH (Sed) - 96/5	יון פיטן יון פיטן ייטן איטן ייטן איטן ייטן איטן ייטן איטן	Rydusius - DI385		
			في مريخ م						Ì			
Semple No. Matrix *	Sample Date	Sample Time										
SOFL	10/20/01	0830		×	X	X	X	×	X	マ		
17												Ī
CHAIN OF POSSESSION	Sign/Fried No.	3		H	SPECIAL INSTRUCTIONS				1000		2	Matrix *
Daring Daring Daring Daring	OCT. 14	37.88ch	Deartime 126		 The inhominy is to report Decembers 110. If present the The inhominary is to report both diseast and barcoons may 	o respect Doctors o respect both 4	seed and baco		ns as a 13C if present in occasions quantities. Keepl and karceina range composité from W1	o quantitati. de from WTPH-D melysis	145	.];
() Treed		Thores			-	Com Bate Cont.	and Spatificacyy (Commission 37, Con-	Comme-13	Continue 137, Constitute Sur-	112 Er	A No.	113
33	KAL				N N	1	78 Bodina 7	T=1261: S	Propries 19.50	47	4	7.4
	a ログリ	7		1			0.30.01	2				
	and Soft	0	DeterTions	,	(2) ICP Media - 6010A (Superior)	LĮJ	os Add On) (Abenimus ded, Potentium, Sodium	Partie	Pirmet Bo			173
winted Byfamored From Darfine Fro	mired By/Barred In		Date/Time	T	(CV); Chromism Hot 7196 (3) NOZNO3 - 353.2, IC Ani		900 (Chlarid	s, Pleatide, N	ions - 300.0 (Chicaida, Fluosida, Númia, Númia, Phosph	hosphate, Sulfate);		
quisted Byflamored Fram Detrition Re	Received By Strend In	۵	DeerTrans	E	- 968 A	A (A440a)		Mark); TPH-I	Sethiden - 9000, Americanis - 390.5, Total Cymans - 9519 (4) Semi-VOA ~ 2270A (Add-On) (Tributyl phesphate); TPH-Diesel Rangs - WTPH-D	CHAL		
BORATORY Reserved By			Titte							ľ	Date/Time	
SECTION ALL SAMPLE Discont Method						Disposed By					Date/Tithe	
SPORTION												
The are are are also												

Data Validation Supporting Documentation

WHC-SD-EN-SPP-002, Rev. 2

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	(0)	D	E
PROJECT:	200-cs-		DATA PACKAGE	: 4165	4-1/1568
VALIDATOR:	TU	LAB: LL	I	DATE: 1 De	-00
CASE:			SDG:	. H (565	
		ANALYSES	PERFORMED		
CLP Volatiles	SW-846 8240 (cap column)	SW-846 8260 (packed column)	CLP Semivaletiles	(cap column)	SW-846 (packed column)
Is technical	KAGE COMPLETED verification rrative presen	documentation	n present? .		Yes No N/A
2. HOLDING Are sample h	TIMES olding times	acceptable?		(Yes No N/F

WHC-SD-EN-SPP-002, Rev. 2

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION		
Is the GC/MS tuning/performance check acceptable? Yes	No /	M/A
Are initial calibrations acceptable? Yes	No /	N/A/
Are continuing calibrations acceptable? Yes	No \	N/A
Comments:		
COMMITTED CS.		
	······································	
4. BLANKS		
Were laboratory blanks analyzed? Yes	No	N/A
Are laboratory blank results acceptable? Yes	No	N/A
Were field/trip blanks analyzed? Yes	(No)	N/A
Are field/trip blank results acceptable? Yes	No	(N/A
Comments:		
•	-	
5. ACCURACY		
Were surrogates/System Monitoring Compounds analyzed? Yes	No	N/A
Are surrogate/System Monitoring Compound recoveries acceptable?	No	N/A
Were MS/MSD samples analyzed? Yes	No	N/A
Are MS/MSD results acceptable?	No	N/A
Comments:		·
		<u>.</u>

* \$600020

WHC-SD-EN-SPP-002, Rev. 2

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6.	PRECISION			
Are	MS/MSD RPD values acceptable?	es l	No	N/A
	field duplicate RPD values acceptable? Y	_	No.	(N/A)
	field split RPD values acceptable?		No	TOTAL
	nents:			
7.	SYSTEM PERFORMANCE	<u> </u>		
Were	e internal standards analyzed?	íes -	No	N/A
Are	internal standard areas acceptable?	/es	No	N/A
	internal standard retention times acceptable? \	ſes	No	M/A/
Is o	COMPOUND IDENTIFICATION AND QUANTITATION compound identification acceptable?	Yes	No No	(N/A) N/A
	REPORTED RESULTS AND QUANTITATION LIMITS			
	results reported for all requested analyses?	,	No	N/A
	all results supported in the raw data?		No	(N/A)
	results meet the CRQLs?		No	N/A
	the laboratory properly identified and coded all TIC?	Yes	No	(M/A)
•				
		<u> </u>		

000021

Date: 6 December 2001

To: Bechtel Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: 200 Area Source Characterization 200-CS-1 Operable Unit - Waste

Management

Subject: Inorganics - Data Package No. H1568-LLI (SDG No. H1568)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1568-LLI prepared by Lionville Laboratory, Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B13C81	10/30/01	Soil	С	See note 1

1-IC anions by 6010B; mercury by 7470A.

Data validation was conducted in accordance with the BHI validation statement of work and the *Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211*, BHI-01562, Rev. 0, October 2001. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times for ICP metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements is six (6) months for ICP metals and 28 days for mercury.

All holding times were acceptable.

Blanks

Preparation (Method) Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the target required quantitation limit (PQL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the IDL and less than or equal to the PQL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

Accuracy

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must fall within the range of 70-130%. Samples with a spike recovery of less than 30% and a sample result below the instrument detection limit (IDL) are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130-70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery results were acceptable.

Precision

Laboratory Duplicate Samples

Laboratory duplicate sample analyses are used to measure laboratory precision and sample homogeneity. Results must be within relative percent difference (RPD) limits of plus or minus 30% for soil samples. If RPD values are out of specification and the sample concentration is greater than five times the PQL, all associated sample results are qualified as estimated and flagged "J". If RPD values are plus or minus two times the PQL and the sample concentration is less than five times the PQL, all associated sample results are qualified as estimated and flagged "J/UJ". The performance criteria for laboratory duplicates are an RPD less than 30% for positive sample results greater than five times the PQL or plus or minus 2 times the PQL for positive sample results less than five times the PQL. Sample results outside the criteria are qualified as estimates and flagged "J/UJ".

Due to an RPD of 30.1%, the boron result was qualified as an estimate and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211 target required quantitation limits (PQL) to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels met the analyte specific PQL.

Completeness

Data package No. H1568-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD of 30.1%, the boron result was qualified as an estimate and flagged "J". Data flagged 'J' is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1568	REVIEWER: TLI	DATE: 12/6/01	PAGE_1_0F_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron	J .	All	RPD

Qualified Data Summary and Annotated Laboratory Reports

Laboratory: Lionville La	aboratory inc.																
Case: SDG: H1588				1													
Sample Number		B13C81															
Remarks							1										
Sample Date		10/30/01															
Inorganics	CRDL			Result	Q	Result	Q	Result	Q.	Result	à	Result	Q	Result	Q	Result	Œ
Silver	2	0.07	5						l					<u> </u>		<u> </u>	
Aluminum		10100											<u> </u>		<u> </u>	<u> </u>	
Arsenic	10	12.1			Ι"			<u> </u>	<u> </u>					<u> </u>			
Boron		3.1	7														
Berlum	20	118			L			<u> </u>			:		<u></u>				
Beryllium	0.5	80.0											<u> </u>	<u> </u>		<u> </u>	—
Bismuth		0.39							oxdot				<u></u>	<u> </u>	<u> </u>	ļ <u>.</u>	Т.
Calcium		24300					<u> </u>	<u> </u>							<u> </u>	L	
Cadmium	0.5	0.27	·			L				ļ							4
Chromium	1	11.8			<u></u>										ļ	ļ	Щ.
Copper	2.5	19.5		ſ	I						ļ	<u> </u>			ļ	<u> </u>	
Iron		26400													<u> </u>		4
Mercury	0.2	0.02			<u></u>			ļ.,,,,,,						.			
Potassium		2260			L										ļ	ļ	4_
Manganese		454					<u> </u>				<u> </u>		<u> </u>		_	<u> </u>	_
Motybdenum		0.53											L			ļ	
Sodium		550			L		Ц_	<u> </u>	<u> </u>		<u></u>	<u> </u>	<u> </u>	·		<u> </u>	_
Nickel	4	12.5					_		<u> </u>				ᆫ		<u> </u>	<u> </u>	
Lead	10	11.7				<u> </u>			<u>L.</u>		ь_		<u> </u>	· ·	_		_
Selenium	10	0.27	٥			<u> </u>		<u> </u>			ļ		<u> </u>		ļ	ļ	
Thaillum		0.52									<u> </u>		L	1	<u> </u>	<u> </u>	
Vanadium	5	52.9						<u> </u>					<u> </u>				
Zinc	2	54.1							<u> </u>				L.,	L	┞	<u> </u>	┿
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PARTITO IN LOT TAT

O'T 21.0 DM/DH 13.5 Mickel, Total 0.τ 44.0 EDL/EN Bodius, Total 0.1 E£.0 EX/DM 64.0 Molybdenum, Total 0. t TO.0 DOL/DM Injoy , ecomogram 0.I 3.4 **901/98** 3360 Potessium, Total 7.0 50.0 EOX/98 % 20.0 Mexouzy, Total 1.0 2.2 DX/DM 36400 Izon, Total 3.5 90.0 EX/ON 2.6T Copper, Total 0 · T **50L/9N** 70.0 S'TT Chromium, Total 4.0 10.0 ON/DH 75.0 Cadatum, Total 0. £ 1.1 DOL/DK 34300 Calcium, Total g·t 66.0 EXT\5M # 66.0 Issot , doubels 0.I TO.0 DOL/DAL Beryllim, Total J'0 ro.o SOL/DM STT Barium, Total BX/DM T.E \$2.0 Boron, Total 1.0 EE.O **100/100** Arsenic, Total J'0 L'I COI/DH TOTOO Aluminum, Total 1'0 BOTAN U TO.0 Silver, Total TESTE TOD-PACTOR RATION LINIT J/IOSBW SLATYNY ai siis ZTANYS DIFOLION **SMITHOGEN**

Sinc, Total

Lead, Total

10MK ONDEN: 37343-606-001-000-00

TIBMI: IMI-HYMBOMD BOS-008

Vanadius, Total

Thallium, Total

Selenium, Total

10/2/21

0.1

0.1

0.1

G.E

\$0.0

\$0.0

₹***

42.0

62.0

901/5N

EOI/EN

DOK/DOM

DM/DH

0.27 1 MG/KG

£.48

6.58

4.11

65.0

INOEGYRICS DYLY SCHINYKL ERFORL IT/T7/07

Idenville Laboratory, Inc.

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD B02-008

LVL#: 0111L256

SDG/SAF#: H1568/H1571/B02-008

W.O.#: 11343-606-001-9999-00

Date Received: 11-02-01

METALS CASE NARRATIVE

- 1. This narrative covers the analyses of 2 soil samples.
- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
- 3. All analyses were performed within the required holding times.
- 4. All cooler temperatures have been recorded on the Chain of Custody.
- All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of the final CCV for Nickel. All samples were surrounded by QC in control.
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.



		<u>PDS</u>	<u>PDS</u>
Sample ID	Element	Concentration (ppb)	% Recovery
B13C81	Aluminum	20,000	100.3
	Calcium	30,000	123.3
	Iron	30,000	107.7
	Manganese	1000	115.2

- 12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Deputy Laboratory Manager

Lionville Laboratory Incorporated

gmb/m i 1-256

1-15-01

Date





MALENATURE Dispos	EABORATORY Residue by	dispited BySaucred Pres	EN 60		CHAIN OF POSSESSION		13081	Sample Na	ST0	Colligion not availa	Samples stored in I	(TIETO RIZAGU	THE TANKS THE PARTY OF THE PART	SP	ed Designation O Area Source Characte	ormas, G/Watson, D	THE PERSON NAMED IN COLUMN
d Medical	at By	Davina	5660 19/2/11		SHOW DAW/Tem		SOFL	Meriz •	>	O for shipment.	Samples stored in Ref.s 15 at the 3726 Binning Pacifity on 10 /3 /01		RIZAGU	HE AMERICAN HAZARDSPRIMARKS	P CS 2	xt Designation 0 Area Source Characterization 200-CS-1 OU - Waste Manu		
		Received By/Stated in	13/10		Sign/Frind No Received By/Dared In		10/20/01	Sample Date		77	`		· · · · ·	Care	Political	2	Casto	
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Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008 H 1568/H1571

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13C81						
SILVER, TOTAL	001	s	01L0730	10/30/01	11/08/01	11/08/01
SILVER, TOTAL	001 RBP	S	01L0730	10/30/01	11/08/01	11/08/01
SILVER, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
ALUMINUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
ALUMINUM, TOTAL	001 RBP	S	01L0730	10/30/01	11/08/01	11/08/01
ALUMINUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
ARSENIC, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
ARSENIC, TOTAL	001 RBP	S	01L0730	10/30/01	11/08/01	11/08/01
ARSENIC, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
BORON, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
BORON, TOTAL	001 RBP	S	01L0730	10/30/01	11/08/01	11/08/01
BORON, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
BARIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
BARIUM, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
BARIUM, TOTAL	001 MS	S	0110730	10/30/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	001 RBP	S	01L0730	10/30/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
BISMUTH, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
BISMUTH, TOTAL REP	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
BISMUTH, TOTAL SPIKE	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
CALCIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
CALCIUM, TOTAL	001 REP	Ş	01L0730	10/30/01	11/08/01	11/08/01
CALCIUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
CADMIUM, TOTAL	001	Ş	01L0730	10/30/01	11/08/01	11/08/01
CADMIUM, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
CADMIUM, TOTAL	001 MS	S	0110730	10/30/01	11/08/01	11/08/01
CHROMIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
CHROMIUM, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
CHROMIUM, TOTAL	001 MS	S	01L0730			11/08/01
COPPER, TOTAL	001	S	01L0730			11/08/01
COPPER, TOTAL	001 RBP	s	01L0730			11/08/01
COPPER, TOTAL	001 MS	s	01L0730			11/08/01
IRON, TOTAL	001	S	01L0730	•		11/08/01
IRON, TOTAL	001 REP	s	01L0730			11/08/01

Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 MS		01L0730	10/30/01	11/08/01	11/08/01
MERCURY, TOTAL	001	S	01C0352	10/30/01	11/08/01	11/08/01
MERCURY, TOTAL	001 RBP	S	01C0352	10/30/01	11/08/01	11/08/01
MERCURY, TOTAL	001 MS	s	01C0352	10/30/01	11/08/01	11/08/01
POTASSIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
POTASSIUM, TOTAL	001 REP	s	01L0730	10/30/01	11/08/01	11/08/01
POTASSIUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
MANGANESE, TOTAL	001	s	0110730	10/30/01	11/08/01	11/08/01
MANGANESE, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
MANGANESE, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
MOLYBDENUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
MOLYBDENUM, TOTAL	001 REP	S	0110730	10/30/01	11/08/01	11/08/01
MOLYBDENUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
SODIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
SODIUM, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
SODIUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
NICKEL, TOTAL	001	S	01 L07 30	10/30/01	11/08/01	11/08/01
NICKEL, TOTAL	001 REP	s	01L0730	10/30/01	11/08/01	11/08/01
NICKEL, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
LEAD, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
LEAD, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
LEAD, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
SELENIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
SELENIUM, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
SELENIUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
THALLIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
THALLIUM, TOTAL	001 REP	S	01L0730	10/30/01	11/08/01	11/08/01
THALLIUM, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
VANADIUM, TOTAL	001	S	01L0730	10/30/01	11/08/01	11/08/01
VANADIUM, TOTAL	001 REP	S	01L0730		11/08/01	11/08/01
VANADIUM, TOTAL	001 MS	S	01L0730			11/08/01
ZINC, TOTAL	001	S	01L0730			11/08/01
ZINC, TOTAL	001 REP	S	01L0730		11/08/01	11/08/01
ZINC, TOTAL	001 MS	S	01L0730	10/30/01	11/08/01	11/08/01
B13CK9	002	_	A4 7 A#*A	/ /	11 /00 /0-	
SILVER, TOTAL	002	S	01L0730	10/31/01	11/08/01	11/08/01

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

		f	ť			<u></u>	
VALIDATOR: TL LAB: LLT DATE: DEC 07 CASE: SDG: H/3L & ANALYSES PERFORMED BANALYSES PERFORMED CUPMG CLP/Cymide C C C C C C C C C C C C C C C C C C C	PROJECT: 2	00-55-1		DATA PACKAG	ie: #1564	. _	
ANALYSES PERFORMED ANALYSES PERFORMED ANALYSES PERFORMED CLP/GFAA ANALYSES PERFORMED CLP/GFAA CLP/GF		4 1 1	LAB: LL	ŧ.	DATE: 1D	ec 07	
CLPACE CAPIGEAA CLPMG CL	CASE:			SDG: #	1568		
SAMPLES/MATRIX (R 13 C V) SAMPLES/MATRIX (R 13 C V) L. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE Is technical verification documentation present?			ANALYSES	PERFORMED			
SAMPLES/MATRIX (R13CV) Sample	CLPICP	□ CLP/GFAA	□ CLP/Mg	☐ CLP/Cyenide	0	О	
DATA PACKAGE COMPLETENESS AND CASE NARRATIVE s technical verification documentation present?	Хэw-өчөлсэ	□ SW-846/GFAA	SW-846Mg		ם	0	
Are sample holding times acceptable? Yes No N	. DATA PACK						
	s a case nar	rative preser	documentatio	n present?			N/N

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS	\wedge
Were initial calibrations performed on all instruments? Yes	No //N/A
Are initial calibrations acceptable? Yes	No / N/A
Are ICP interference checks acceptable? Yes	No N/A
Were ICV and CCV checks performed on all instruments? Yes	No N/A
Are ICV and CCV checks acceptable? Yes	No N/A
Comments:	
	· · · · · · · · · · · · · · · · · · ·
4. BLANKS	
Were ICB and CCB checks performed for all applicable analyses?	No (N/A)
Are ICB and CCB results acceptable?	•
Were preparation blanks analyzed?	No N/A
Are preparation blank results acceptable? Yes	No. N/A
Were field/trip blanks analyzed? Yes (No NA
Are field/trip blank results acceptable? Yes	No (N/A)
Comments:	
5. ACCURACY	
Were spike samples analyzed?	No N/A
Are spike sample recoveries acceptable?	No PN/A
Were laboratory control samples (LCS) analyzed? Yes	No (N/A')
Are LCS recoveries acceptable? Yes	No (T/A)
Comments: al calain from mangares -alle	me finde
Commences.	74
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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION		
Were laboratory duplicates analyzed?	Yes I	lo N/A
Are laboratory duplicate samples RPD values acceptable?	. Yes (i	D N/A
Were ICP serial dilution samples analyzed?	_	to (N/A)
Are ICP serial dilution %D values acceptable?		to (N/A)
Are field duplicate RPD values acceptable?		lo (N/A)
Are field split RPD values acceptable?		lo WA
Comments: Born 30.1 J		
7. FURNACE AA QUALITY CONTROL		
Were duplicate injections performed as required?	. Yes	No / N/A
Are duplicate injection %RSD values acceptable?	. Yes	No N/A
Were analytical spikes performed as required?	. Yes	No N/A
Are analytical spike recoveries acceptable?	. Yes l	No N/A
Was MSA performed as required?	. Yes	No N/A
Are MSA results acceptable?	. Yes	No N/A
Comments:		
8. REPORTED RESULTS AND DETECTION LIMITS		
Are results reported for all requested analyses?	Yes	No NA
Are all results supported in the raw data?	. Yes	No (N/A)
Are results calculated properly?		No N/A
Do results meet the CRDLs?	. (Yes)	No N/A
Comments:		
		<u> </u>
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Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/01

TLIENT: THU-HAMPORD B02-008

LVL LOT #: 0111L256

MORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	result	UNITS	reporting Linit	DILUTION FACTOR

BLANKI	01L0730-MB1	Silver, Total	0.06 u	NG/KG	0.06	1.0
PINNY	01fig \ 10_smr	Aluminum, Total	4.2	MG/KG	1.4	1.0
		Arsenic, Total	0.32 u	MG/KG	0.32	1.0
		Boron, Total	0.52	NG/KG	0.18	1.0
		Barium, Total	0.07	MG/KG	0.01	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Biswuth, Total	0.32 u	•	0.32	1.0
		Calcium, Total	2.7	NG/KG	0.89	1.0
		Cadmium, Total	0.03 u	•	0.03	1.0
		Chromium, Total	0.11	MG/KG	0.06	1.0
		Copper, Total	0.12	NG/KG	0.05	1.0
		Iron, Total	1.7 u	MG/KG	1.7	1.0
		Potassium, Total	8.3	MG/KG	1.9	1.0
		Mandanese, Total	0.02	MG/KG	0.01	1.0
		Nolybdenum, Total	0.11 u	NG/KG	0.11	1.0
		Sodium, Total	7.5	MG/KG	0.36	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.19 u	NG/KG	0.19	1.0
		Selenium, Total	0.22 u	MG/NG	0.22	1.0
		Thallium, Total	0.28 u	MG/KG	0.28	1.0
		Vanadium, Total	0.05 u	MG/KG	0.05	1.0
		Sinc, Total	0.15	MG/KG	0.03	1.0
BLANCI	01C0352-NB1	Mercury, Total	0.02 1	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/13/01

CLIENT: THU-HANFORD BO2-008

LVL LOT #: 0111L256

MORK ORDER: 11343-606-001-9999-00

		•	SPIKED	initial	SPIKED		DILUTION
SAMPLE	SITE ID	AMALYTE	sample	Result	ANOUNT	*RECOV	factor (BPK)
	*************	22244262446822467244		*******		****	********
-001	B13C81	Silver, Total	5.4	0.07u	6.1	88.5	1.0
		Aluminum, Total	11000	10100	243	374.4*	1.0
		Arsenic, Total	227	12.1	243	88.4	1.0
		Boron, Total	107	3.1	122	85.2	. 1.0
		Barium, Total	330	118	243	87.5	1.0
		Beryllium, Total	5.4	0.06	6.1	87.2	1.0
		Bismuth, Total	557	0.394	608	91.7	1.0
		Calcium, Total	28800	24300	3040	148.7*	1.0
		Cadmium, Total	5.5	0.27	6.1	85.8	1.0
		Chromium, Total	33.0	11.0	24.3	87.2	1.0
		Copper, Total	48.9	19.5	30.4	96.7	1.0
		Iron, Total	25500	26400	122	-790. *	1.0
		Nercury, Total	0.20	0.02u	0.20	101.0	1.0
		Potassium, Total	\$470	2260	3040	105.4	1.0
		Manganese, Total	489	454	60.8	57.44	1.0
		Holybdenum, Total	106	0.53	122	86.5	1.0
		Sodium, Total	3600	660	3040	100.5	1.0
	*	Nickel, Total	63.2	12.5	60.8	16.1	1.0
		Lead, Total	63.9	11.7	60.8	85.9	1.0
		Selenium, Total	207	0.27u	243	85.0	1.0
		Thallium, Total	206	0.52	243	84.4	1.0
		Vanadium, Total	104	52.9	60.t	84.4	1.0
		Zinc, Total	106	54.1	€0.4	45.0	1.0

XX

TAP TOL 4: OTTTPSEC

НОВК ОВРВИ: ЛИО-ИУНБОИО ВОЗ-008 СПІВИД: ДИО-ИУНБОИО ВОЗ-008

0.1	33.0	7.42	1.44	Sinc, Total		
0.1	SE.0	2.52	6.52	Vanadium, Total		
0.1	E. 6	78.0	ZS'O	Ison, mulliant		
1.0	266	u75.0	UTE.O	Selentum, Total		
a.t	00.0	7.11	4.11	Lead, Total		
0.1	00.0	73.5	2.21	Wickel, Total		
0.1	**	865	220	fodium, Total		
0'1	2.7	69.0	EZ.O	Nolybdenum, Total		
D'T	\$"%	997	757	KadoT , esemagnak		
1.0	3.6	3320	3360	Fotassius, Total	•	
0.1	AC.	£0.0	UE0.0	Mercury, Total		
0.1	£8.0	26700	36400	Ixon, Total		
0.1	75.0	9.61	S'61	Copper, Total		
J.0	r.1	13.0	8.11	Chromium, Total		
0'τ	4.2	32.0	TE.D	Cadmium, Total		
D.1	2.2	34800	34300	Calcium, Total		
7.0	DEC	ues.o	M6E.0	Biemuth, Total		
σ.τ	£.7£	01.0	80.0	Seryllium, Total		
0.1	ε.ε	733	222	Bartum, Total		
0.1	1.06	4.2	1.6	Rozon, Total		
J.0	€.€	2.21	1.51	Armenic, Total		
0.1	2.2	70 € 00	70700	Lador , municula		
0.1	ait	#50.0	μ70.0	Silver, Total	PTICET	-001REP
********	*****	******	*******	***************		******
PACTOR (REP)	MAD.	YEPLICATE	Linera	ANALYTE	GI HIIS	Sympie
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INOSEGNICE ESECUTION REPORT 11/13/01

Lionville Laboratory, Inc.

Date: 6 December 2001

To: Bechtel Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: 200 Area Source Characterization 200-CS-1 Operable Unit - Waste

Management

Subject: Wet Chemistry - Data Package No. H1568-LLI (SDG No. H1568)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1568-LLI prepared by Lionville Laboratory, Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B13C81	10/30/01	Soil	С	See note 1 & 2

1-IC Anions - 300.0 (chloride, fluoride, nitrate, nitrite, phosphate, sulfate); chromium VI by 7196A; ammonia - 350.3; hydrazine USAFSAM-Report TR-82-29; nitrate/nitrite 353.2; sulphide 9030B. 2-Nitrate not validated per BHI instructions (SAF B02-008).

Data validation was conducted in accordance with the BHI validation statement of work and the *Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211*, BHI-01562, Rev. 0, October 2001. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times are assessed to ascertain whether the holding time requirements have been met by the laboratory. The holding time requirements are as follows: 30 days for chromium VI; 28 days for ammonia, hydrazine, nitrate/nitrite and ICP anions (chloride, sulphate, fluoride); 14 days for cyanide;

7 days for sulphide; 2 days for ICP anions (nitrate, nitrite, phosphate); and immediate for pH.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

Holding times were met for all parameters and samples.

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the project quantitation limit (PQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

Accuracy

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must fall within the range of 70-130%. Samples with a spike recovery of less than 30% and a sample value below the instrument detection limit (IDL) are rejected and flagged "UR". Samples with a spike recovery of 30-69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery results were acceptable.

Precision

Laboratory Duplicate Samples

Laboratory duplicate sample analyses are used to measure laboratory precision and sample homogeneity. Results must be within relative percent difference (RPD) limits of plus or minus 30%. If RPD values are out of specification and the sample concentration is greater than five times the PQL, all associated sample results are qualified as estimated and flagged "J". If RPD values are plus or minus two times the PQL and the sample concentration is less than five times the PQL, all associated sample results are qualified as estimated and flagged "J/UJ". The performance criteria for aqueous laboratory duplicates are an RPD less than 30% for positive sample results greater than five times the PQL or plus or minus the PQL for positive sample results less than five times the PQL. Sample results outside the criteria are qualified as estimates and flagged "J/UJ".

Due to an RPD outside QC limits (32.3%), the chloride result was qualified as an estimate and flagged "J".

Due to an RPD outside QC limits (34.5%), the ammonia result was qualified as an estimate and flagged "J".

All other laboratory duplicate results were within the required control limits.

Field Duplicate Samples

No field duplicate results were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211 target required quantitation limits (PQL) to ensure that laboratory detection levels meet the required criteria. Nitrite, cyanide and sulphide results were reported above the PQL. Under the BHI statement of work, no qualification is required. All other reported laboratory detection levels met the analyte specific PQL.

Completeness

Data package No. H1568-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits (32.3%), the chloride result was qualified as an estimate and flagged "J". Due to an RPD outside QC limits (34.5%), the ammonia result was qualified as an estimate and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Nitrite, cyanide and sulphide results were reported above the PQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WHC procedures are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. The
 associated concentration is an estimate, but the data are usable for
 decision-making purposes.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1568	REVIEWER: TLI	DATE: 12/6/01	PAGE_1_0F_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chloride Ammonia	J	All	RPD

Qualified Data Summary and Annotated Laboratory Reports

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Project: BECHTEL-HANFORD				ł																							
Laboratory: Lionville Laboratory				ļ														*									
Gase;		H1568						T				T		r				_		1							
Sample Number		B13C81		ļ						ļ						 								<u> </u>		├—	
Remarks																		L						 		\vdash	
Sample Date		10/30/0	_			<u> </u>							_	ļ	_	ļ					_			<u> </u>		—	
General Chemistry	TRQL	Result	Q	Result	Q	Result	a	Result	a	Result	Q	Result	a	Result	a	Result	Q	Result	<u>a</u>	Result	Q	Result	a	Result	<u>a</u>	Result	t C
Chloride	2						<u> </u>				ļ	ļ <u>.</u>	匚								ļ		_	<u> </u>		 -	
Fluoride	5						<u> </u>		L.		_		匚	ļ <u>. </u>	L_				╙		lacksquare		<u> </u>		ļ	<u> </u>	
Nitrite	0.75	1.52	U				<u> </u>	ļ	匚				ᆫ		_		<u></u>			ļ	<u> </u>		<u> </u>		ш	<u> </u>	
Nitrate	0.75	300	_				<u> </u>		L		<u> </u>		<u> </u>		L	ļ <u> </u>			L		┖		<u> </u>				
Cyanide, total	0.5						L						<u> </u>		L.				L				<u> </u>			<u> </u>	
Phosphata	5	1.5	U								<u> </u>		L	<u> </u>					<u> </u>					<u></u>	.	<u> </u>	—
Chromium VI	0.5	0.49	U						L		<u> </u>		匚								L		<u> </u>	ļ	$ldsymbol{ldsymbol{ldsymbol{eta}}}$	<u> </u>	
Sulfate	5	61.7							L	L	<u> </u>		Щ					ļ. <u> </u>	L		<u> </u>		L.			<u> </u>	
Hydrazine		1.2	U						<u>L</u> .		_		匚		Ш				L				<u>L</u>			<u> </u>	
Nitrate/nitrite	0.75	69.6											匚	,					_						$ldsymbol{ldsymbol{ldsymbol{ldsymbol{eta}}}$		
Ammonia		11.6	J								_		匚				<u> </u>	ļ	<u> </u>				<u> </u>	<u> </u>			
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Sulphide	5	46.4	U																L						<u> </u>	<u> </u>	
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Lionville Laboratory, Inc.

IMORGANICE DATA SURMARY REPORT 11/16/01

CLIENT: TRU-HAMFORD 802-008 H1548/H1571

LVL LOT #: 0111L256

### PACTOR	WORK ORDI	KR: 11343-606-001-9999-	00				
						REPORTING	DILUTION
-001 B13C81	Sample	SITE ID					
Chloride by IC Pluoride by IC Pluoride by IC 1.52 u Mg/NG 1.52 1.0 Mitrite by IC 1.52 u Mg/NG 1.52 1.0 Mitrite by IC 200 Mg/NG 1.52 1.0 Cyanide, Total Phosphate by IC 1.5 u Mg/NG 5.1 Chromium VI 0.49 u Mg/NG 5.1 6.6 mg/NG 1.5 1.0 Chromium VI 0.49 u Mg/NG 5.1 6.1 Hydrarine 1.2 u Mg/NG 1.2 1.0 Mitrate Mitrite 69.6 Mg/NG 2.4 10.0 Aumonia, as M 11.6 Mg/NG 5.1 Mg/NG 46.4 1.0 -002 Paloride by IC 1.5 u Mg/NG 2.6 Mg/NG 2.6 Mg/NG 3.7 1.0 Mitrite By IC 1.2 1.0 Mitrite By IC 226 Mg/NG 2.6 Mg/NG 2.6 5.0 Mitrite by IC 226 Mg/NG 3.6 5.0 Mitrite by IC 226 Mg/NG 3.6 5.0 Mitrite by IC 227 Mg/NG 3.6 5.0 Mitrite by IC 228 Mg/NG 3.6 5.0 Mitrite by IC 220 Mg/NG 3.6 5.0 Mitrite by IC 3.0 Mg/NG 3.6 5.0 Mitrite by IC 3.0 Mg/NG 3.6 5.0 Mg/NG 3.6 3.0 Mg/NG 3.6 3.0 Mg/NG 3.6 3.0 Mg/NG	******						
Pluoride by IC 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.52 1.0 1.0 1.52 1.0 1.0 1.52 1.0 1.0 1.52 1.0 1.0 1.52 1.0 1.0 1.52 1.0 1.0 1.52 1.0 1.0 1.52 1.0 1.	-001	B13C81			-		
Mitrite by IC Nitrate by IC Nitrate by IC Nitrate by IC Cyanida, Total Phosphate by IC Chronium VI O.69 u MG/KG Nitrate Mitrite Nitrate Mitrite Ammonia, as M Sulfide 69.6 MG/KG 1.5 MG/KG 1.5 MG/KG 1.5 1.0 Mitrate Mitrite 69.6 MG/KG 1.6 MG/KG 3.7 1.0 MItrate Mitrite 69.6 MG/KG 3.7 1.0 MG/KG 3.7 1.0 MG/KG 3.7 1.0 MG/KG M			Chloride by IC	. —			= :
Nitrate by IC 200 NG/NG 18.2 10.0	,		Fluoride by IC		•		
Cyanida, Total 0.53 u MG/MG 0.53 1.0 Phosphate by IC 1.5 u MG/MG 1.5 1.0 Chromium VI 0.49 u MG/MG 0.49 1.0 Sulfate by IC 61.7 MG/MG 1.5 1.0 Hydrazina 1.2 u MG/MG 1.2 1.0 Mitrate Nitrite 69.6 MG/MG 2.4 10.0 Ammonia, as N 11.6 MG/MG 3.7 1.0 pH 8.3 SOIL PH 0.01 1.0 Sulfide 46.4 u MG/MG 46.4 1.0 Fluoride by IC 226 MG/MG 9.6 5.0 Fluoride by IC 19.2 u MG/MG 19.2 5.0 Nitrite By SC 2.62 u MG/MG 38.5 20.0 Cyanida, Total Phosphate by IC 9.6 u MG/MG 38.5 20.0 Chromium VI 3.0 MG/MG 9.6 5.0 Sulfate by IC 9.6 u MG/MG 9.6 5.0 Chromium VI 3.0 MG/MG 0.62 1.0 Sulfate by IC 2970 MG/MG 192 100 Rydrazina 1.5 u MG/MG 1.5 1.0 Mitrate Nitrite 210 MG/MG 1.5 1.0 Mitrate Nitrite 210 MG/MG 1.5 1.0 Mitrate Nitrite 210 MG/MG 1.5 1.0 MMMONG 3.8 1.5 1.0 MMMONG 3.8 1.0 MMMONG 6.3 20.0 MMMONG 6.5 SOIL PH 0.01 1.0			Mitrite by IC	1.52 u	•		
Phosphate by IC Chromium VI O.49 u Mg/Kg O.49 1.0 Sulfate by IC Hydraxine 1.2 u Mg/Kg 1.5 1.0 Hydraxine 1.2 u Mg/Kg 1.5 1.0 Hydraxine 1.2 u Mg/Kg 1.2 1.0 Hitrate Nitrite 69.6 Mg/Kg 3.7 1.0 PH 8.3 SOIL PH 0.01 1.0 Sulfide 46.4 u Mg/Kg 46.4 1.0 Fingride by IC 19.2 u Mg/Kg 46.4 1.0 Chloride by IC 19.2 u Mg/Kg 19.2 5.0 Nitrite Dy SC Nitrite Dy SC Nitrite by IC Oyanide, Total Phosphate by IC 0.72 u Mg/Kg 0.72 1.0 Sulfate by IC 0.72 u Mg/Kg 0.62 1.0			Nitrate by IC	=	-	=	
Chromium VI			Cyanide, Total	0.53 u	NG/KG	0.53	1.0
Sulfate by IC Hydraxina 1.2 u MG/KG 1.2 1.0 Hydraxina Nitrate Nitrite 69.6 MG/KG 2.4 10.0 Ammonia, as M 11.6 HG/KG 3.7 1.0 PH 8.3 SOIL PH 0.01 1.0 Sulfide 46.4 u MG/KG 46.4 1.0 -002 Delice 4 Solida 55.0 0 0.01 1.0 Flugride by IC 226 MG/KG 9.6 5.0 Flugride by IC 19.2 u MG/KG 19.2 5.0 Nitrate by IC 19.2 u MG/KG 19.2 5.0 Nitrate by IC 19.2 u MG/KG 38.5 20.0 Cyanide, Total Phosphate by IC 19.6 u MG/KG 9.6 5.0 Chromium VI 3.0 MG/KG 9.6 5.0 Chromium VI 3.0 MG/KG 19.2 1.0 Sulfate by IC 19.6 u MG/KG 19.2 1.0 Hydraxina 1.5 u MG/KG 1.5 1.0 Hitrate Nitrite 210 MG/KG 3.6 3 20.0 Ammonia, as N 24.3 MG/KG 3.8 5 1.0 PH 3.0 MG/KG 3.8 1.0			Phosphate by IC	1.5 u	· Mg/Kg	1.5	1.0
Hydrarine 1.2 u MG/RG 1.2 1.0 Nitrate Nitrite 69.6 MG/RG 2.4 10.0 Ammonia, as N 11.6 MG/RG 3.7 1.0 pH 8.3 SOIL PH 0.01 1.0 Sulfide 46.4 u MG/RG 46.4 1.0 Chloride by IC 226 MG/RG 9.6 5.0 Plugride by IC 19.2 u MG/RG 19.2 5.0 Nitrite By IC 2.53 u MG/RG 38.5 20.0 Cyanide, Total Phosphate by IC 29.6 u MG/RG 9.6 5.0 Chromius VI 3.0 WG/RG 9.6 5.0 Sulfate by IC 2970 MG/RG 1.5 1.0 MG/RG 1.5 1.0 MG/RG 1.5 1.0 MG/RG 1.6 3.0 MG/RG 1.7 1.0 MG/RG 1.7 1.0 MG/RG 1.0 MG/RG 1.0 MG/RG 1.10 MG/RG 1.5 1.0 MG/RG 1.5 1.0 MG/RG 1.5 1.0 MG/RG 1.5 1.0 MG/RG 1.0 MG/RG 1.0 MG/RG 1.5 1.0 MG/RG MG/RG 1.5 1.0 MG/RG MG/RG 1.5 1.0 MG/RG MG/RG 1.5 1.0			Chronium VI	0.49 u	NG/KG	0.49	1.0
Nitrate Nitrite 69.6 MG/NG 2.4 10.0 Ammonia, as N 11.6 MG/NG 3.7 1.0 pH 8.3 SOIL PH 0.01 1.0 Sulfide 46.4 U MG/NG 46.4 1.0 Chloride by IC 226 MG/NG 9.6 5.0 Plugride by IC 19.2 U MG/NG 19.2 5.0 Nitrate by IC 25.0 U MG/NG 9.62 5.0 Nitrate by IC 25.0 U MG/NG 38.5 20.0 Cyanide, Total 0.72 U MG/NG 38.5 20.0 Chromium VI 3.0 MG/NG 9.6 5.0 Chromium VI 3.0 MG/NG 0.62 1.0 Sulfate by IC 2970 MG/NG 192 100 Rydraxina 1.5 U MG/NG 1.5 1.0 Mitrate Nitrite 210 MG/NG 6.3 20.0 Ammonia, as N 34.3 MG/NG 3.8 1.0 pH 6.5 SOIL PH 0.01 1.0			Sulfate by IC	61.7	NG/KG	1.5	1.0
Ammonia, as M PH BI BI BI BI BI BI BI BI BI B			Hydrazina	1.2 u	NG/KG	1.2	1.0
### B.3 SOIL PH 0.01 1.0 Sulfide 46.4 u MG/KG 46.4 1.0 -002 Beacks 4 Solids 5E.0 6 0.01 1.0 Chloride by IC 226 MG/KG 9.6 5.0 Pluoride by IC 19.2 u MG/KG 19.2 5.0 Nitrite By IC 9.50 u MG/KG 38.5 20.0 Cyanide, Total 9.72 u MG/KG 38.5 20.0 Cyanide, Total 9.6 u MG/KG 9.6 5.0 Chromium VI 3.0 MG/KG 9.6 5.0 Chromium VI 3.0 MG/KG 19.2 100 Hydraxins 1.5 u MG/KG 1.5 1.0 Hitrate Nitrite 210 MG/KG 1.5 1.0 Mitrate Nitrite 210 MG/KG 3.8 1.0 Ammonia, as N 34.3 MG/KG 3.8 1.0			Nitrate Nitrite	69.6	_MG/103	2.4	10.0
Sulfide 46.4 u MG/KG 46.4 u MG/KG 46.4 1.0 -002 Seacks 4 Solids Chloride by IC 226 MG/KG 9.6 5.0 Placetide by IC 19.2 u MG/KG 9.62 5.0 Nitrite by EC 9.62 NG/KG 38.5 20.0 Cyanide, Total Phosphate by IC 22 MG/KG 9.6 10 Chromium VI 3.0 MG/KG 9.6 5.0 Chromium VI 3.0 MG/KG 192 100 Hydraxine 1.5 u MG/KG 1.5 1.0 Mitrate Nitrite 210 MG/KG 3.8 1.0 PM 6.5 SOIL PH 0.01 1.0			Ammonia, as M	11.6	ng/kg	3.7	1.0
-002 PRICKS			PH	8.3	SOIL P	0.01	1.0
Chloride by IC 226 MG/KG 9.6 5.0 Fluoride by IC 19.2 U MG/KG 19.2 5.0 Nitrite By EC 9.52 U MG/KG 9.62 5.0 Nitrate by IC 22 MG/KG 38.5 20.0 Cyanide, Total 9.6 U MG/KG 9.6 5.0 Chromium VI 9.6 U MG/KG 9.6 5.0 Chromium VI 2.0 MG/KG 0.62 1.0 Sulfate by IC 2970 MG/KG 192 100 Hydrasins 1.5 U MG/KG 1.5 1.0 Mitrate Nitrite 210 MG/KG 6.3 20.0 Ammonia, as N 34.3 MG/KG 3.8 1.0 PM 6.5 SOIL PH 0.01 1.0			Sulfide	46.4 u	NG/KG	46.4	1.0
Chloride by IC 226 NG/KG 9.6 5.0 Fluoride by IC 19.2 u NG/KG 19.2 5.0 Nitrite By IC 9.52 u NG/KG 9.62 5.0 Nitrate by IC 9.62 u NG/KG 38.5 20.0 Cyanide, Total 0.72 u NG/KG 38.5 20.0 Phosphate by IC 9.6 u NG/KG 9.6 5.0 Chromium VI 3.0 NG/KG 9.62 1.0 Sulfate by IC 2970 NG/KG 9.62 1.0 Hydraxina 1.5 u NG/KG 192 100 Hydraxina 1.5 u NG/KG 1.5 1.0 Mitrate Nitrite 210 NG/KG 6.3 20.0 Ammonia, as N 34.3 NG/KG 3.8 1.0 PM 6.5 SOIL PH 0.01 1.0	-003	Вызск я	t Solida	65.0	•	0.01	1.0
Nitrite By SC 9.52. u MG/NG 9.62 5.0 Nitrate by IC 22 MG/NG 38.5 20.0 Cyanide, Total 0.72 u MG/NG 0.72 1.0 Phosphate by IC 9.6 u MG/NG 9.6 5.0 Chromium VI 3.0 MG/NG 5.62 1.0 Sulfate by IC 2970 MG/NG 192 100 Hydrasina 1.5 u MG/NG 1.5 1.0 Mitrate Nitrite 210 MG/NG 6.3 20.0 Ammonia, as N 34.3 MG/NG 3.8 1.0 PM 6.5 SOIL PH 0.01 1.0			Chloride by IC	226	MG/KG	9.6	5.0
Nitrite Dy SC 9.62 8.0 Nitrate by IC 22 NG/KG 38.5 20.0 Cyanide, Total 0.72 u NG/KG 0.72 1.0 Phosphate by IC 9.6 u NG/KG 9.6 5.0 Chromium VI 3.0 NG/KG 0.62 1.0 Sulfate by IC 2970 NG/KG 192 100 Hydraxina 1.5 u NG/KG 1.5 1.0 Mitrate Nitrite 210 NG/KG 6.3 20.0 Ammonia, as N 34.3 NG/KG 3.8 1.0 PM 6.5 SOIL PH 0.01 1.0			Plugride by IC	19.2 u	MG/KG	19.2	5.0
Cyanide, Total 0.72 U WG/NG 0.72 1.0 Phosphate by IC 9.6 U WG/NG 9.6 5.0 Chromium VI 3.0 WG/NG 0.62 1.0 Sulfate by IC 2970 WG/NG 192 100 Hydrasina 1.5 U WG/NG 1.5 1.0 Witrate Nitrite 210 WG/NG 6.3 20.0 Ammonia, as N 34.3 WG/NG 3.8 1.0 PM 6.5 SOIL PH 0.01 1.0				2,62 ,u	MG/303	9.62	\$.0
Phosphate by IC 9.6 u MG/KG 9.6 5.0 Chromium VI 3.0 MG/KG 0.62 1.0 Sulfate by IC 2970 MG/KG 192 100 Hydraxina 1.5 u MG/KG 1.5 1.0 Witrate Nitrite 210 MG/KG 6.3 20.0 Ammonia, as N 34.3 MG/KG 3.8 1.0 PM 6.5 SOIL PH 0.01 1.0			Nitrate by IC	Mil	- NG/KG	38.5	20.0
Chromium VI 3.0 MG/KG 5.62 1.0 Sulfate by IC 2970 MG/KG 192 100 Hydraxina 1.5 u MG/KG 1.5 1.0 Witrate Nitrite 210 MG/KG 6.3 20.0 Ammonia, as N 34.3 MG/KG 3.8 1.0 pH 6.5 SOIL PH 0.01 1.0			Cyanide, Total	72 U	NO/NO	0.72	1.0
Sulfate by IC 2970 HG/KG 192 100 Hydraxina 1.5 u HG/KG 1.5 1.0 Hitrate Nitrite 210 HG/KG 6.3 20 G Ammonia, as N 34.3 HG/KG 3.8 1.0 pH 6.5 SOIL PH 0.01 1.0			Phosphate by IC	9.6 0	MO/100	9.6	5.0
Hydraxins 1.5 u MG/KG 1.5 1.0 Witrate Nitrite 210 MG/KG 6.3 20.0 Ammonia, as N 34.3 MG/KG 3.8 1.0 pH 6.5 SOIL PH 0.01 1.0			Chromium VI	3.0	MG/KG	0.62	1.0
Hydraxina 1.5 u MG/KG 1.5 1.0 Mitrate Nitrite 210 MG/KG 6.3 70.0 Ammonia, as N 34.3 MG/KG 3.8 1.0 pH 6.5 SOIL PH 0.01 1.0			Sulfate by IC	2970	MG/XG	192	100
Mitrate Nitrite 210 MG/KG 6.3 70.0 Ammonia, as N 34.3 MG/KG 3.8 1.0 pH 6.5 SOIL PH 0.01 1.0			•	1.5 u	MG/KG	1.5	1.0
Ammonia, as H 34.3 NG/KO 3.8 1.0 pH 6.5 SOIL PH 0.01 1.0			Nitrate Nitrite	210	MG/KG	6.3	200
PH 6.5 SOIL PH 0.01 1.0				34.3	NG/KG	3.0	1.0
			•	6.5	SOIL 1	PH 0.01	1.0
			Sulfide	61.2	1 MG/XG	61.2	1.0

X 12/3/01

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD B02-008 H1568/H1571

W.O.#: 11343-606-001-9999-00

LVL#: 0111L256

Date Received: 11-02-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

- The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
- 3. Sample holding times as required by the method and/or contract were met.
- 4. The cooler temperatures were recorded on the chain of custody.
- 5. The method blanks were within the method criteria.
- 6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.
- 7. The matrix spike recoveries were within the 75-125% control limits with the exception of Sulfide that was below the control limits that may be attributed to sample inhomogeneity.
- 8. The replicate analyses were within the 20% RPD control limit with the exception of Chloride, Ammonia and Sulfide that may be attributed to sample inhomogeneity.
- 9. Results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Dota

Deputy Laboratory Manager

Lionville Laboratory Incorporated

njp\i11-256

The results presented in this report relate to the analytical testing and conditions of the analytical upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its extircty of 16 pages.

Bechtel Hai	oford Inc.	C	HAIN OF CUST	TODY/S	AMPL.	CANAL.	VSIS	REQUES	Г	B	02-008-01	Pregc 1	of]
Collector Thomas, G/Watson, D		Comp	eny Contact riock, CS	Telephor 372-9	ne No.			Project Coord TRENT, SJ		Price Code	~67.j	(-Blen Tu	merund
Project Designation 200 Area Source Charact	orization 200-CS-1 OU - Was	de Mana 200	ling Location East & West			,		SAF No. 1302-008		Air Qualit	8 H	15.I	Days 71
Ice Chest No. Se	e ESPC	Pield	Logbook No. EL-IS	51	COA XL2002C	DA Method of Shipment 2002CHGR Fod Ex						_ <i>T</i>	
Shipped To Theo/RECRA			18278X18		00ly 1429/61			BII of Lading	572	M 4/A	19/39b/		
POSSIBLE SAMPLE HA	ZARDS/REMARKS		7	T	17								
TIETO	BIBLRY		Preservation	Neue	None	Coal 4C Coal 4C	₩.C	4C	Non	4C		<u> </u>	<u> </u>
			Type of Container	•6	#G	aG .	•0	10	*6	aG	•G		
Samples stored in I	Ref.# A nt the litty on 16/30/01.	_	No. of Container(s)	1 /	1	1	1)	1	1	1		
Collector not available samples on	able to reliaquisa 🛴	ان ان	Volume	1000mlt.	500mL	1000mL	1000m	L 120mL	60m	L 120mL	120ml		
014	BAMPLE ANAL	Ysis		100 m	See Herr (2) in Special Instructions.	Ser item (3) in Special Instructions.	See Hop (4 Special funtraction	î î	pH (Soil)	9045 VOA - \$366, (TCL); VOA \$268A (Add On) (1- Propunol, Etlamol)	D1385		
Sample No.	Matrix *	Sample Date	Sample Time										
B13C81	SOIL	10/30/01	0830		X	X	X	K	X		7		
<u> </u>							ļ <u>.</u>		<u> </u>			↓	ļ
				 	 	<u> </u>					<u> </u>	<u> </u>	
<u> </u>				 		<u> </u>	 -		-		-} -	}	
CHAIN OF POSSES	SION	Sign/Prim	t Names	<u> </u>	SPEC	TAL INSTR	UCTION		<u> </u>		ــــــــــــــــــــــــــــــــــــــ		Metrix *
Relinquished By/Removed From DSw4750V/43V Relinquished By/Removed From	Date/Time Date/Time Date/Time Date/Time Date/Time Date/Time 11/2/61 0935	Received By/Stee	Thoras		(H)-CO (H)-CO (Total Isotope (Z) K (CY). (GV). (3) N Sulfide	ne laboratory is ne laboratory is ne laboratory is neutropient 1557; mr-242, Radjum Literatura, lasto sic Literatura, P. Metalis - 6010A, detalis - 6010A, Chrousium, Hetology, Molybde Chrousium, M	to report Dito report be to report be conducted. Commercial 226. Radii pia Phanni 12.3 44. 0A (Superince maren, Nick K - 7196 2; IC Anion monia - 350	preme as a TIC if p th diesel and learn mann spectfoaco; per *Add on (Am man, Jostopia Thori / /o * 3 * 0 * mace) (Arsenic, B. Add-On) (Alumi el, Potassium, Sod ms - 300,0 (Chloric 3; Total Cyunide	y (Ceston science 2 (Ceston 2) 2 Tin-126 turn (Thorizon Cadama, Borylium, Thallie, Fluoride 9010	letectable quantitie compounds from W 137, Cathatress,- 11, Automory 123, 11: Strontisms-129 gians. 2321; America haisen, Chromiten, Hisam, Bismuth, Be jum, Vanadium, Z a, Nitrata, Nitrita, PH-Diesel Range	VIPH-D mniyaj Burum-152, C Burum-152, C LTatel-8-1 G ium-241; Napu , Lead, Selenius, xon, Calcium, C inc); Mercury - Phosphate, Sulf	Europism- mione 134, recurst; mion 237; n, Silver); coppes, Iron, 7471 -	9-Ball Sibilations Sibilations Sibilation Sibilation (9-Oil A-Air Di-Drum Lighth Di-Trum Lighth Trifficate Wi-Wipe L-Light V-Vegetation X-Other
LABORATORY Ressive	d By	-1 -		Tid	•							Outo/Time;	·
FINAL SAMPLE Dispose DISPOSITION	i Method					Diago	eed By	·				Delo/Titte	



Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008 H1568/H1571

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13C81						
* SOLIDS	001	s	01L \\$ 152	10/30/01	11/05/01	11/06/01
* SOLIDS	001 REP	S	01L % S152	10/30/01	11/05/01	11/06/01
CHLORIDE BY IC	001	S	01LXC074	10/30/01	11/08/01	11/08/01
CHLORIDE BY IC	001 REP	S	01LXC074	10/30/01	11/08/01	11/08/01
CHLORIDE BY IC	001 MS	S	01LXC074	10/30/01	11/08/01	11/08/01
FLUORIDE BY IC	001	S	01LXC074	10/30/01	11/08/01	11/08/01
FLUORIDE BY IC	001 REP	S	01LXC074	10/30/01	11/08/01	11/08/01
PLUORIDE BY IC	001 MS	S	01LXC074	10/30/01	11/08/01	11/08/01
NITRITE BY IC	001	S	01LXC074	10/30/01	11/08/01	11/08/01
NITRITE BY IC	001 REP	S	01LXC074	10/30/01	11/08/01	11/08/01
NITRITE BY IC	001 MS	s	01LXC074	10/30/01	11/08/01	11/08/01
NITRATE BY IC	001	S	01LXC074	10/30/01	11/08/01	11/08/01
NITRATE BY IC	001 REP	S	01LXC074	10/30/01	11/08/01	11/08/01
NITRATE BY IC	001 MS	S	01LXC074	10/30/01	11/08/01	11/08/01
TOTAL CYANIDE	001	S	01LCA98	10/30/01	11/09/01	11/09/01
PHOSPHATE BY IC	001	S	01LXC074	10/30/01	11/08/01	11/08/01
PHOSPHATE BY IC	001 REP	S	01LXC074	10/30/01	11/08/01	11/08/01
PHOSPHATE BY IC	001 MS	S	01LXC074		11/08/01	11/08/01
CHROMIUM VI	001	S	01LVI086		11/07/01	11/07/01
CHROMIUM VI	001 REP	S	01LVI086		11/07/01	11/07/01
CHROMIUM VI	001 MS	S	01 LVI08 6		11/07/01	11/07/01
CHROMIUM VI	001 MS	S	01LVI086		11/07/01	11/07/01
SULFATE BY IC	001	S	01LXC074	10/30/01	11/08/01	11/08/01
SULFATE BY IC	001 RBP	S	01LXC074	- • •	11/08/01	11/08/01
SULFATE BY IC	001 MS	S	01LXC074		11/08/01	11/08/01
HYDRAZINE	001	S	01LHZ004		11/06/01	11/06/01
HYDRAZINE	001 REP	S	01LHZ004			11/06/01
HYDRAZINE	001 MS	S	01LHZ004	10/30/01		11/06/01
NITRATE NITRITE	001	S	01LN3061	10/30/01	11/15/01	11/15/01
NITRATE NITRITE	001 REP	S	01LN3063			11/15/01
NITRATE NITRITE	001 MS	S	01LN3063	10/30/01	11/15/01	11/15/01
AMMONIA	001	S	01LAM05			11/08/01
PH	001	s	01LPH079	5 10/30/01		11/05/01
PH	001 REP	S	01LPH07	5 10/30/01		11/05/01
SULFIDE	001	S	01LSDA6	0 10/30/01	11/05/01	11/05/01

Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008 H1568/H1571

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CK9						
* SOLIDS	002	S	01L%S152	10/31/01	11/05/01	11/06/01
CHLORIDE BY IC	002	s	01LXC074	10/31/01	11/08/01	11/08/01
FLUORIDE BY IC	002	S	01LXC074	10/31/01	11/08/01	11/08/01
NITRITE BY IC	002	S	011XC074	10/31/01	11/08/01	11/08/01
NITRATE BY IC	002	Š	01LXC074	10/31/01	11/08/01	11/08/01
TOTAL CYANIDE	002	S	01LCA98	10/31/01	11/09/01	11/09/01
TOTAL CYANIDE	002 REP	Š	01LCA98	10/31/01	11/09/01	11/09/01
TOTAL CYANIDE	002 MS	s	01LCA98	10/31/01	11/09/01	11/09/01
PHOSPHATE BY IC	002	S	01LXC074	10/31/01	11/08/01	11/08/01
CHROMIUM VI	002	S	01LVI086	10/31/01	11/07/01	11/07/01
SULFATE BY IC	002	S	01LXC074	10/31/01	11/08/01	11/08/01
HYDRAZINE	002	S	01LHZ004	10/31/01	11/06/01	11/06/01
NITRATE NITRITE	002	S	01LN3061	10/31/01	11/15/01	11/15/01
AIRAID MIRIID	002	S	01LAM050	10/31/01	11/08/01	11/15/01
AMMONIA	002 REP	S	01LAM050		11/08/01	
AMMONIA	002 MS	S			11/08/01	11/08/01
PH			01LAM050	10/31/01		11/08/01
	002	S	01LPH075		11/05/01	11/05/01
SULFIDE	002		01LSDA60		11/05/01	11/05/01
SULFIDE	002 REP	S	01LSDA60		11/05/01	11/05/01
SULFIDE	002 MS	S	01LSDA60	10/31/01	11/05/01	11/05/01
AB QC:						
						
CHLORIDE BY IC	MB1	s	01LXC074	N/A	11/08/01	11/08/01
CHLORIDE BY IC	MB1 BS	Š	01LXC074	• • • • • • • • • • • • • • • • • • • •	11/08/01	11/08/01
FLUORIDE BY IC	MB1	Š	01LXC074	•	11/08/01	11/08/01
FLUORIDE BY IC	MB1 BS	s	01LXC074		11/08/01	11/08/01
NITRITE BY IC	MB1	Š	01LXC074		11/08/01	11/08/0
NITRITE BY IC	MB1 BS	Š	01LXC074	•	11/08/01	11/08/0
NITRATE BY IC	MB1	s	01LXC074	•	11/08/01	11/08/0
NITRATE BY IC	MB1 BS	Š	01LXC074	· .	11/08/01	11/08/0
TOTAL CYANIDE	LCS L	S	01LCA98	N/A	11/09/01	11/09/0
TOTAL CYANIDE	LCS L	Š	01LCA98	N/A	11/09/01	11/09/0
TOTAL CYANIDE	MB1	S		N/A	11/09/01	11/09/0
PHOSPHATE BY IC	MB1	S			11/08/01	11/08/0

Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008 H1568/H1571

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	analysis
						
PHOSPHATE BY IC	MB1 BS	S	01LXC074	N/A	11/08/01	11/08/01
CHROMIUM VI	MB1	S	01LVI086	n/A	11/07/01	11/07/01
CHROMIUM VI	MB1 BS	S	01LVI086	n/a	11/07/01	11/07/01
CHROMIUM VI	MB1 BS	S	01LVI086	N/A	11/07/01	11/07/01
SULFATE BY IC	MB1	S	01LXC074	N/A	11/08/01	11/08/01
SULFATE BY IC	MB1 BS	\$	01LXC074	n/a	11/08/01	11/08/01
HYDRAZINE	MB1	S	01LHZ004	N/A	11/06/01	11/06/01
HYDRAZINE	MB1 BS	S	01LHZ004	n/a	11/06/01	11/06/01
HYDRAZINE	MB1 BSD	S	01LHZ004	N/A	11/06/01	11/06/01
NITRATE NITRITE	MB1	S	01LN3061	N/A	11/15/01	11/15/01
NITRATE NITRITE	MB1 BS	S	01LN3061	N/A	11/15/01	11/15/01
AMMONIA	MB1	S	01LAM050	N/A	11/08/01	11/08/01
AIROMMA	MB1 BS	S	01LAM050	N/A	11/08/01	11/08/01
AMMONIA	MB1 BSD	S	01LAM050	N/A	11/08/01	11/08/01
SULFIDE	MB1	S	01LSDA60	N/A	11/05/01	11/05/01
SULFIDE	MB1 BS	S	01LSDA60	N/A	11/05/01	11/05/01

Data Validation Supporting Documentation

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

****	T .	<u> </u>			
VALIDATION LEVEL:	A	8	(c)	0	Ε
PROJECT:	200-05-1		DATA PACKAGI	: 4156	S'
VALIDATOR:	TLI	LAB: /_(L.		1/01
CASE:			SDG: #/	56.8	
		ANALYSES	S PERFORMED		
Anione/IC	□ TOC	C) TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
Xemmonia	D BOD/COD	Chloride	Chromium-VI	DQ+1	CNO,MO,
C) Sulfate	C) TDS	D TION	☐ Phosphate	Thydroun	6
۵	0	0	0		0
SAMPLES/MA	TRIX BI30	(8)	Soil		
1. DATA PA	CKAGE COMPLETE	NESS AND CAS	E NARRATIVE		
Is technica Is a case n	l verification arrative prese	documentati	on present? .		Yes No A
Is technica	l verification arrative prese	documentati	on present? .		
Is technica Is a case n Comments: 2. HOLDING	l verification arrative prese	documentati	on present? .		Yes No N
Is technica Is a case n Comments: 2. HOLDING Are sample	l verification arrative prese TIMES holding times	documentati	on present? .		
Is technica Is a case n Comments: 2. HOLDING Are sample	l verification arrative prese	documentati	on present? .		Yes No N
Is technica Is a case n Comments: 2. HOLDING Are sample	l verification arrative prese TIMES holding times	documentati	on present? .		Yes No N
Is technica Is a case n Comments: 2. HOLDING Are sample	l verification arrative prese TIMES holding times	documentati	on present? .		Yes No N
Is technica Is a case n Comments: 2. HOLDING Are sample	l verification arrative prese TIMES holding times	documentati	on present? .		Yes No N
Is technica Is a case n Comments: 2. HOLDING Are sample	l verification arrative prese TIMES holding times	documentati	on present? .		Yes No N

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION	
	N= /N/A
Was initial calibration performed for all applicable analyses? Yes	No / N/A
Are initial calibration results acceptable? Yes	No N/A
Was a calibration check performed for all applicable analyses? Yes	No NA
Are calibration check results acceptable? Yes Comments:	No N/A
Consider US:	
4. BLANKS	
	Wa N/A
Were laboratory blanks analyzed?	No N/A
Are laboratory blank results acceptable?	No N/A
Were field/trip blanks analyzed? Yes	
Are field/trip blank results acceptable? Yes Comments:	No (N/A)
5. ACCURACY	
Were spike samples analyzed at the required frequency? Yes	•
Are spike recoveries acceptable? Yes	
Were LCS analyses performed at the required frequency? Yes	
Are LCS recoveries acceptable? Yes	No NA
Comments:	
6. PRECISION	
Were laboratory duplicate samples analyzed	-
at the required frequency?	
Are field duplicate RPD values acceptable? Yes	s No N/A
Are field split RPD values acceptable? Ye	s No (N/A)

	GENERAL CHEMISTRY DATA VALIDATION CHECKETS!	
Comments: (Chloride (32.32)	
	anmones (34.52) / Jall	
Sulphite	RPD Incorned hut are U	
7. ANALYTE Q	WANTITATION	
	quantitation performed properly? Yes	No N/A
		····
	RESULTS AND DETECTION LIMITS	
	reported for all requested analyses? Yes	No N/A
Are results s	supported in the raw data? Yes	No NA
	calculated properly? Yes	N6 (N/A)
	eet the CRDLs? Yes	NO N/A
Comments:	nitrate + sulphile - am 79L	<u> </u>
	+ Cycind	 _
	<u> </u>	
		
		
		
		
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Additional Documentation Requested by Client

PROUNTING PRODESSORA' INC.

INOMETRICS HELHOD STYDE DYLY ROBBING SYCS 77/78/07

TAP FOL #: OTTTPSEC

MORK ONDER: 77343-404-007-0099-00

CITEMA: LMO-HYMLOMD BOS-008 HTEES/HTSLT

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0.1	02.0	501/0H	u 05.0	edirate Mitrite	TEM-T90CMTTO	STYMET 0
0.1	0.1	506/9M	# 0.1	Hydrazina	TEM-PODERTIO	BIVNKTO
0.1	0,40	20K/DH	n 0≯.0	Chromina VI	OTEN-980IATTO	BIVMCTO
0.1	05.0	90i/0#	n 05.0	Cyanide, Total	TEN-SEVOTTO	BEYMC
σ.1	2.1	201/200	1.2 u	sulfate by IC		
0.1	2.1	em/en	n gr	Phosphate by IC		
O.I	1.25	EDL/200	1.25 u	Mitrace by IC		
0-1	1.25	EX/DM	1.35 U	Michige PA IC		
0.1	2.5	501/DH	p 2.5	Sinoxide by IC		•
O'T	£.1	OX/OH	n 2.1	cyforige ph ic	OTIXCOA-NET	BEVIOLT 0
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II/IE/OI	REPORT	YCCOMYCI	INOEGYNICS

Promatife reposestors' Inc.

PAF FOL \$: Offffree

CPIENL: IMM-NYMBOND BOS-008 H7268\H7217

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0.£	3.66	0.85	1.254	.6.45	Mitzate by IC	•	
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7.0	6.E01	0.02	u 2.£	€.12	DI vd abixonia		
a.t	£, 26	25.0	4.2	8.62	Chloride by IC	Offrcolf-Hai	BLANKLO
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0.1	93.4	* 4.*	WET.O	8C.A	Cyanide, Total	ETICK	200-
0.01	1.86	8.38	3.63	734	Hitrate Witzite		
T.O	9 . COT	T.3	n E.I	£.3	Hydrazine		
0.8	8.56	723	4.18	303	Sulfate by IC		
TOO	T'STT	7760	40.0	7330	Insoluble Chromium VI		
0.1	2.06	6.4	D67.0	5 · V	Soluble Chromium VI		
7.0	707.0	0.0E	n s.r	£.0£	Phosphate by IC		
0.05	0.66	109	300	204	Mitrate by IC		
σ·τ	9.00T	9.05	nes.t	£.0£	Micrice by IC		
0.1	2.201	0.19	AT.0	T . 29	Fluoride by IC		
0.1	\$. TOT	0.0£	2.3	I.TE	Chloride by IC	BIĞCBI	T00-
				*****	*****	医单产企业的与非常等的自由实际企业工	******
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					00	** 17343-606-007-9888-	NORK ORDER

X

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 11/16/01

CLIENT: TNU-HAMFORD B02-008 H1568/H1571

LVL LOT #: 0111L256

WORK ORDER: 11343-606-001-9999-00

			SPIKE#:	SPIKE#2	t
Sanple	SITE ID	analite	*RECOV	IRECOV	ADIFF
===			*	*****	Reserv
BLAKK10	01LH2004-MB1	Hydrazine	103.1	103.6	0.46
BLANKIO	01LAM050-MB1	Ammonia, as N	102.8	103.2	0.49

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/16/01

CLIENT: THU-HAMPORD B02-008 H1568/H1571

LVL LOT #: 0111L256

WORK ORDI	R: 113	43-606-	001-91	199-00
-----------	--------	---------	--------	--------

BAMPLE	SITE ID	ANALYTE	INITIAL		RPD	DILUTION FACTOR (REP)
			RESULT	REPLICATE		
244442	=======================================	*************		*******	*****	
-001REP	B13C81	% Solids	82.3	82.6	0.30	1.0
		Chloride by IC	6.6	4.8	32.3	1.0
		Fluoride by IC	3.0 u	3.0 u	IRC.	1.0
		Mitrite by IC	1.524	1.52u	NC .	1.0
		Mitrate by IC	200	301	0.40	10.0
		Phosphate by IC	1.5 u	1.8 u	14C	1.0
		Chromium VX	0.494	0.49u	MC	1.0
		Sulfate by IC	61.7	60.E	2.0	1.0
		Hydrazine	1.2 u	1.2 u	NC	1.0
		Nitrate Mitrite	69.6	67.2	3.4	10.0
		pH	8.3	8.4	0.6	1.0
-002R#P	313CK9	Cyanide, Total	0.72u	6.44u	MC.	1.0
	•	Ammonia, as H	34.3	48.6	34.5	1.0
		Sulfide	61.2 u	60.1	~45.33.3 ~4 4.4.0	1.0

Date: 6 December 2001

To: Bechtel Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: 200 Area Source Characterization 200-CS-1 Operable Unit - Waste

Management

Subject: Gasoline & Diesel Range Organics - Data Package No. H1568-LLI (SDG

No. H1568)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1568-LLI prepared by Lionville Laboratory, Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B13C81	10/30/01	Soil	С	See note 1

¹⁻Diesel range organics, motor oil, n-propyl alcohol and ethanol by 8015B.

Data validation was conducted in accordance with the BHI validation statement of work and the *Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211*, BHI-01562, Rev. 0, October 2001. Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding time is assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements is 14 days to extraction and 40 days for analysis.

All holding times were acceptable.

Blanks

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the project quantitation limit (PQL) and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the PQL level and qualified as undetected "U".

All blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

Accuracy

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 25% and a sample result below the instrument detection limit (IDL) are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to the lack of a matrix spike analysis, the motor oil result was qualified as estimate and flagged J".

All matrix spike recovery results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If surrogate recoveries are out of control limits (50-100%) or outside laboratory control limits, all associated sample results greater than the target required quantitation limit (PQL) are qualified as estimates and flagged "J". Sample results less than the PQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the PQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

Due to the lack of a surrogate analysis, all n-propyl alcohol and ethanol results were qualified as estimates and flagged "J".

All other surrogate recovery results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211 PQLs to ensure that laboratory detection levels meet the required criteria. All reported results exceeded

the PQL. Under the BHI statement of work, no qualification is required.

• Completeness

Data package No. H1568-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None reported.

MINOR DEFICIENCIES

Due to the lack of a matrix spike analysis, the motor oil result was qualified as estimate and flagged J". Due to the lack of a surrogate analysis, all n-propyl alcohol and ethanol results were qualified as estimates and flagged "J". Data flagged 'J' is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All reported results exceeded the PQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.
 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1568	REVIEWER: TLI	DATE: 12/6/01	PAGE_1_OF_1_
COMMENTS:			5
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Motor oil	J .	All	No MS/MSD
n-Propyl alcohol Ethanol	J	All	No surrogate analysis

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD]											
Laboratory: Lionville Laboratory Inc	•			1		ř									
Case:	SDG: H	1568													
Sample Number		B13C81										!			
Remarks															
Sample Date		10/30/01													
Extraction Date		11/5/01						***	-						
Analysis Date		11/5/01			-										
Gasoline/Diesel Range Organics	CRQL	Result	Q	Result	Q.	Result	Q	Result	a	Result	Q	Result	Q	Result	Q
n-Propyl alcohol	5		UJ			Ī									T
Ethanol	5		UJ						Ī						
Diesel range organics	5											ŀ	l		
Motor oil	5		UJ			ŀ									
				-											
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Lionville Laboratory, Inc.

GC SCAN

Report Date: 11/09/01 14:140 RFW Batch Number: 0111L256 Client: TNU-HAMFORD B02-008 Work Order: 11343606001 Page: 1 Cust ID: B13C81 B13CB1 B13C81 B13CK9 BLK BLK BS Sample RFW#: 001 001 MS 001 MSD 002 01LJMB05-MB1 01LJMB05-MB1 Information Matrix: SOIL SOIL SOIL SOIL SOIL SOIL D.F.: 1.00 1.00 1.00 1.00 1.00 1.00 Units: mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg 6.0 U J n-Propyl Alcohol 86 85 % 8.0 U 5.0 T 103 6.0 U J 86 % 83 % 8.0 U **Ethanol** 5.0 U 99 Cust ID: BLK BSD Sample RFW#: OlL-TMB05-MB1 Matrix: SOIL Information D.F.: 1.00 Units: mg/kg n-Propyl Alcohol 98

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

94 %

Ethanol

12/3/4

Lionville Laboratory, Inc. DIESEL RANGE ORGANICS BY GC

RFW Batch Number: 0111L256 Client: TNU-HANFORD B02-008 Work Order: 11343606001 Page: 1 B13C81 B13C81 Cust ID: B13C81 B13CK9 BLK BLK BS 001 001 MS 001 MSD Sample RFW#: 002 01LE1331-MB1 01LE1331-MB1 Information Matrix: SOIL SOIL SOIL SOIL SOIL SOTE D. F. : 1.00 1.00 1.00 4.00 1.00 1.00 Units: mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg p-Terphenyl 62 ŧ 76 97 ם ŧ 38 52 76 14.6 U 94 73.6 U 12.0 U Diesel Range Organics 63 14.6 UJ NS 760 12.0 U

NS

NS

Report Date: 11/08/01 13:060

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. t= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Motor Oil

Laboratory Narrative and Chain-of-Custody Documentation



-Analytical Report

Client: THU HANFORD

LVL#: 0111L256

W.O.#: 11343-606-001-9999-00

Date Received: 11-02-01

GC SCAN

The set of samples consisted of two (2) soil samples collected on 10-30-01.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015B for Gasoline Range Organic (GRO) target compounds Ethanol and n-Propyl Alcohol on 11-05-01.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. The samples were packaged and stored as specified in the method protocol.
- 2. Surrogates are not currently employed in the methodology.
- 3. All initial calibrations were within acceptance criteria.
- 4. All continuing calibrations run prior to analysis were within acceptance criteria.
- 5. All blank spike recoveries were within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.

ain Daniels

Deputy Laboratory Manager

Lionville Laboratory Incorporated

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Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.



GCSC ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008 H 1 508/H 1531

DATE RECEIVED: 11/02/01

LVL LOT # :0111L256

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	analysis
						
B13C81	001	8	01LJMB05	10/30/01	11/05/01	11/05/01
B13C91	001 MS	S	01LJMB05	10/30/01	11/05/01	11/05/01
B13C81	001 MSD	S	01LJMB05	10/30/01	11/05/01	11/05/01
B13CK9	002	s	01LJMB05	10/31/01	11/05/01	11/05/01
LAB QC:						
BLK	MB1	s	01LJMB05	N/A	11/05/01	11/05/01
BLK	MB1 BS	S	01LJMB05	n/a	11/05/01	11/05/01
BLK	MB1 BSD	S	01LJMB05	N/A	11/05/01	11/05/01

How .h.h.



Analytical Report

Client: TNU-HANFORD B02-008

LVL#: 0111L256

SDG/SAF#: H1568/H1571/B02-008

W.O.#: 11343-606-001-9999-00

Date Received: 11-02-01

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 10-30-01.

The samples and their associated QC samples were prepared on 11-05-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 11-07-01. The analysis met the intent of method WTPH-D.

- 1. All cooler temperatures have been recorded on the chain-of-custody.
- 2. All required holding times for extraction and analysis were met.
- 3. All initial calibrations associated with this data set were within acceptance criteria.
- 4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
- 5. All obtainable surrogate recoveries were within acceptance criteria.
- 6. The blank spike recovery was within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Lain Daniels
Deputy Laboratory Manager

Lionville Laboratory Incorporated

R:\share\dro\11-256.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirity of \$ pages 00000.

Mary.

للا الديما

TO/LO/TT	TO/SO/TT	A\N	A/N	OIPRIBBI	8	88	WBT		BLK
10/60/11	T0/S0/TT	A\N	A/M	OTERIBBE	S		WBJ		BIK
									:DQ 84.1
T0/L0/TT	TO/SO/TT	17/05/01	TO/TE/OT	TEETRITO	s		200		ВТ3СК6
TO/LO/TT	TO/SO/TT	T7/05/07	TO/0E/0T	OTEET33T	S	MBD	TOO		BT3C8T
TO/LO/TT	TO/SO/TT	17/05/01	TO/0E/0T	OILEI33I	S	SM	T00		BT3C8T
TO/LO/TT	TO/SO/TT	11/05/01	TO/0E/0T	OIPETBBI	S		τοο		BT3G8T
			~						
SISXTVNA	EXT/PREP	DAK STAG	COFFECIA	# 43344	MIX	#	EEM	ID	CFIEML

RPW LOT # : Ollilizing

NOV 2001

Lionville Laboratory, Inc.

Lionville Laboratory, Inc.

AND SALVATICAL DATA PACKAGE FOR

APPLICATION DOS-008

APPLICATION DOS-008

LFC//805/

APPLICATION DOS-008

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Becier	rianiord inc.			IAIN OF CUST by Contact	Telepho		LANAL	1919	Project		natar	1971.01 -				
Thomas, G/Watson,	, D		Cearlock, C8 372-9638						TRENT, SJ							
rject Designation 200 Area Source Ch	naracterization 200-CS-1 OU - \		200 E	ig Location Last & West				SAF No. B02-008			Air Quality 1 15			Days Ri		
: Chept No.	ee EBPC		Field La	ogbook No. EZ-15!	51_	COA XL2002CHGR				of Stalp x	ment		, <u></u>			
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OSSIBLE SAMPL	e hazarde/remarks		$\neg \neg$			\overline{H}			T					1	ł i	
TIETO	D B13284		Preservation		Name) None	Coal 4C Coal 4C	10		4C Cod	Nene	Coal 4C Coal 4C	Name			
	_	•	į	Type of Container	" /	/ *	l aG	.0		± 0	.6	•0	•0			
Samples store	d in Ref.# At the Facility on 10/30/01.			No. of Container(s)	17	l	1	. 1		1	1	1	1			
Collector and		110,		Volume	1000m/L	500mL	1000mL	1000	1	20mL	60miL	120mL	120mL			
sampas on <u>11</u>	SAMPLE AN		·····		Sales de	Eas Sent (2) in Special Instructions.	See item (3) in Special Instructions	Spe jhom (Special Smetpack)		Ba - 9062	při (Kaiř) - 9945	VOA - E2MA (TCL); VOA - E2MA (Add- On) (1- Propund), (Manol)	Hydraine - DISES			
Sample No.	. Matrix *	Валар	e Date	Sample Time											ie da la	
113C81	SOIL	10/34	0/01 0830			X	X	X		<u> </u>	X	×	人			
O					_								<u> </u>	<u> </u>		
Ö								<u> </u>			<u> L</u>	<u></u>	<u> </u>	<u> </u>		
CHAIN OF PO			p/Print				TAL INSTR	UCTIO	NS	TIC W.					Matrix *	
M20-1-1-4-1-1	Day 1 093!	PASS RES	Dy/Syr	Thores	office -[-] office	(i)-0 (i)-0 (i)-4	in laboratory in in laboratory in in laboratory in incomplishing German 1937; mt-242, Radium 1937; mt-242, Radium Linnatora, Lotania 6010A, Chrumiany Hei CO/NC3 - 353, let - 9030; Americal VCA - 82	to report to pen-Boto; Commer; 226, Rad pin-Plutes -////////////////////////////////////	Surreit Sp Spring Sp Spring Louis Spring Louis Louis Louis Strang Louis Spring Loui	and laren Efficiency I on - (Am Lodina - 2 via Dani 3	y (Casium-137 minima 241-A 2 To-126): 80 mm (Thorina- 2 (rinna, Cadrolan mm, Boyllinen inn, Thollinn, n, Fluoride, Ni 9010	powia from Wi , Citati: 40; Ba nationary 195; B nonting 89 90. 2021; Americia n, Chromium, E. Biomuth, Bor Vanadism, Zin nenta, Nitrita, Pi	nopius 152, B naisus 158, Ca "Total Sty Ga m 341; Neptus and, Selecium, C e); Maccury - : hosphate, Sulfi VTPH-D	immplien- starre 34, tappets, sinon-237; , Silver); opper, iron, 747) -	S-Sall SS-Salama	
SECTION	N							eed By						Outo/Time		
Disposition	Disposal Method '						- Umpo	<i>3</i> 7								

Data Validation Supporting Documentation

WHC-SD-EN-SPP-002, Rev. 2

GENERAL GC DATA VALIDATION CHECKLIST

PROJECT: 200-CS-1 DATA PACKAGE: #ISC8 VALIDATOR: †() LAB: LCT DATE: 2Decol CASE: SDG: #ISC8 ANALYSES PERFORMED D D D D D D D D D D D D D D D D D D	VALIDATOR:		В	(c)	D	E
ANALYSES PERFORMED ANALYSES PERFORMED BISO BISI DWTPH-HCD DWTPH-D D SAMPLES/MATRIX: 313 CS S SOIL 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE Is technical verification documentation present?		200-C2-1		DATA PACKAGE	: H156	8
ANALYSES PERFORMED SO10	CASE:	TLI	LAB: LL	T	DATE: 200	.col
Design De					568	
Design De			ANALYSES	PERFORMED		
SAMPLES/MATRIX: \$1308 Soil 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE Is technical verification documentation present?	D 2010	D\$015	1		8140	8141
SAMPLES/MATRIX: \$313 CS 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE Is technical verification documentation present?	□ 8150	□ 8181	□ WTPH-HCID	□ WTPH-G	□ WTPH-D	0
1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE Is technical verification documentation present?		0	o .	o	0	0
L. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE Is technical verification documentation present?	SAMPLES/MAT	RIX: 1313	C81			Soil
Are sample holding times acceptable? Yes No	Is technical Is a case na	verification	documentation	on present? .	(
		TIME				

A-1600020

WHC-SD-EN-SPP-002, Rev. 2

GENERAL GC DATA VALIDATION CHECKLIST

3.	INSTRUMENT CALIBRATION
3.1	INITIAL CALIBRATION
Was	an initial calibration performed? Yes No (N/A)
Are	*RSD values for calibration or response factors acceptable? Yes No N/A
Com	ments:
3.2	CONTINUING CALIBRATION
Was	a continuing calibration check performed? Yes No No
	#No values for calibration or response factors acceptable? . Yes No No No ments:
Wer Are Wer	BLANKS re laboratory blanks analyzed?
5.	ACCURACY
Wer	re surrogates analyzed? Yes No N/A
	e surrogate recoveries acceptable?
	re MS/MSD samples analyzed? Yes No N/A
	e MS/MSD recoveries acceptable? (es) No N/A
	re LCS samples analyzed? Yes No WA
Are	e LCS recoveries acceptable? Yes No (N/A)

WHC-SD-EN-SPP-002, Rev. 2

Comments: esharel + n-propy) «closhed - no sure NOMS - mater and - I	<u>-</u>
• •	
6. PRECISION	,
Are MS/MSD sample RPD values acceptable? Yes	No N/A
Are field duplicate RPD values acceptable? Yes	
Are field split RPD values acceptable? Yes Comments:	No (N/A)
7. COMPOUND IDENTIFICATION AND QUANTITATION	
Is compound identification acceptable? Yes	No (N/A
Is compound quantitation acceptable? Yes Comments:	No (N/A)
8. REPORTED RESULTS AND DETECTION LIMITS	9
Are results reported for all requested analyses? (Yes	NO N/A
Are all results supported in the raw data? Yes	No N/A
Do results meet the CRQLs? Yes	(NO) N/A
Comments: meta al + DRO-over	
10-prop + thank - over	
	

A- 000022

Date: 6 December 2001

To: Bechtel Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: 200 Area Source Characterization 200-CS-1 Operable Unit - Waste

Management

Subject: Radiochemistry - Data Package No. H1568-ES (SDG No. H1568)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1568-ES prepared by Eberline Services (ES). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Bate	Media	Validation	Analysis
B13C81	10/30/01	Soil	С	See note 1

¹⁻Gross alpha; gross beta; carbon-14; neptunium-237; curium-242; total strontium; americium-241; isotopic uranium, plutonium and thorium; neptunium-237; gamma spectroscopy; total uranium.

Data validation was conducted in accordance with the BHI validation statement of work and the Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, BHI-01562, Rev. 0, October 2001. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

Preparation (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

Due to the lack of a blank analysis, all americium-241(aea), curium-242, sodium-22, antimony-125, tin-126, cesium-134, and barium-133 results were qualified as estimates and flagged "J".

All blank results were acceptable.

Field Blank

No field blanks were submitted for analysis.

Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130% (80-120% for gamma analytes). In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30%, tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of an LCS, all americium-241(aea) and curium-242 results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike analysis, all carbon-14 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

• Laboratory Duplicates

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the PQL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the PQL, the RPD control limit is less than or equal to two times the PQL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Detection Levels

Reported analytical detection levels are compared against the Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, BHI-01562, Rev. 0, PQLs to ensure that laboratory detection levels meet the required criteria. The europium-154 result was reported above the PQL. Under the BHI statement of work, no qualification is required. All other reported laboratory results were reported at or below the analyte-specific PQL.

Completeness

Data package No. H1568-ES (SDG No. H1568) was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of a blank analysis, all americium-241(aea) curium-242, sodium-22, antimony-125, tin-126, cesium-134, and barium-133 results were qualified as estimates and flagged "J". Due to the lack of an LCS, all americium-241(aea) and curium-242 results were qualified as estimates and flagged "J". Due to the lack of a matrix spike analysis, all carbon-14 results were qualified as estimates and flagged "J". Data flagged 'J' is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

The europium-154 result was reported above the PQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2
Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1568	REVIEWER: TLI	DATE: 12/6/01	PAGE_1_0F_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Curium-242 Sodium-22 Antimony-125 Tin-126 Cesium-134 Barium-133 Americium-241(aea)	J	All	No blank analysis
Americium-241(aea) Curium-242	J	All	No LCS analysis
Carbon-14	J	All	No matrix spike analysis

Qualified Data Summary and Annotated Laboratory Reports

				-													
Project: BECHTEL-HANFORD																	
Laboratory: Eberline Services																	
Case	SDQ: H	1568															
Sample Number		B13C81															
Remarks																	
Sample Date		10/30/01								[
Rediochemistry	CRDL	Result	Œ	Result	a	Recult	a	Result	a	Result	a	Result	a	Result	a	Result	a
Grass Alpha	10	9,54			L		L										
Gross Beta	15	18.3															•
Carbon-14		-0.983	w														
Total Strontium	1	-0.058	ŭ												L		
Thorium-228		0.796	υ		_								L				
Thorium-230		0.660									<u> </u>						
Thorium-232	1	0.991			L		$oxed{oxed}$				<u> </u>	<u> </u>					
Total Uranium (ug/g)	1	2.76										<u>'</u>	L		<u> </u>		Ш
Uranium-233	1	0.774			_		匚						匚		L		Ш
Uranium-235	1	0.026					L		_				<u> </u>		匚		┷
Uranium-238	1	0.495					L		_								Ш
Neptunium-237	1	0.028	_							<u> </u>	L_						Ш
Plutonium-238	1	0	U							ļ							1
Plutonium-239/240	1		ح										L		<u> </u>		Ш
Curium-242		0	3						_								Ш
Americium-241	1	0.025	3						_								Ш
Sodium-22			3														Ш
Antimony-125		U	IJ							<u> </u>							Ш
Potassium 40		16.0															Ш
Tin-126		บ	5														Ш
Cobalt-60	0.1	U	U				匚										
Berlum-133			IJ				<u> </u>										
Geskum-134			IJ				_	******						***************************************			Ш
Cesium-137	0.5	U	U_				L	.	<u> </u>								Ш
Redium-228		0.788															Ш
Redium-228	0.2	1.11															Ш
Europium 152	0.1	U															Ш
Europium 154	0.1	U													Ш		Ш
Europium 155	0.1	, n	U						Щ								Ш
Thorium-228 (genume)		0,954					_		_								\sqcup
Thorium-232 (gamma)		1.11		· ·			Ш		Щ								Ш
Urankım-235 (gemma)]	U	_			-											
Urankım-238 (gemme)		U							Щ								\square
Americium-241 (gamma)	1	U	U														Ш

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1568

R111015-01

DATA SHEET

B13C81

· ·	7131 Melissa C. Mannion	Client/Case no Contract		3 H1568
)		Collected/Weight	B13C81 200 East & West 10/30/01 08:30 921.5 q B02-008-01 B02-008	

ANALYTE	CAS NO	RESULT PC1/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	Test
Gross Alpha	12587-46-1	9.54	3.8	3.7	10	se	93 A
Gross Beta	12587-47-2	18.3	6.2	9.2	15		93B
Carbon 14	14762-75-5	-0.983	2.7	4.7	50	UJ	C
Total Strontium	SR-RAD	-0.058	0.14	0.28	1.0	ប	SR
Thorium 228	14274-82-9	0.796	0.67	0.89		U	TH
Thorium 230	14269-63-7	0.660	0.53	0.63	1.0	Be	TH
Thorium 232	TH-232	0.991	0.53	0,51	1.0	15	TH
Total Uranium (ug/g)	7440-61-1	2.76	0.35	0.27	0.10		U_T
Uranium 233	U-233/234	0.774	0.26	0.16	1.0	7	ຫື
Uranium 235	15117-96-1	0.026	0.052	0.20	1.0	u	U
Uranium 238	U-238	0.495	0.22	0.16	1.0	A	ช
Neptunium 237	13994-20-2	0.028	0.056	0.11	1.0	บ	NP
Plutonium 238	13981-16-3	0	0.070	0.27	1.0	บ	PÜ
Plutonium 239/240	PU-239/240	0	0.070	0.27	1.0	บ	PÜ
Curium 242	15510-73-3	٥	0.052	0.20		ד ט	TP
Americium 241	14596-10-2	0.025	0.049	0.19	1.0	לב ט	TP
Sodium 22	13966-32-0	Ū		0.036		UI	GAM
Antimony 125	14234-35-6	ט		0.061		ひゴ	GAM
Potassium 40	13966-00-2	16.0	0.67	0.30			GAM
Tin 126	SN-126	ซ		0.065		v I	GAM
Cobalt 60	10198-40-0	Ū		0.033	0.050	ซ	GAM
Barium 133	13981-41-4	Ū		0.032		v J	GAM
Cesium 134	13967-70-9	บั		0.050		UJ	GAM
Cesium 137	10045-97-3	Ū		0.027	0.10	<u> </u>	GAM
Radium 226	13982-63-3	0.788	0.061	0.050	0.10	_	GAM
Radium 228	15262-20-1	1.11	0.15	0.13	0.20		GAM
Europium 152	14683-23-9	ש		0.062	0.10	บ	GAM
Europium 154	15585-10-1	U		0.11	0.10	ซ	GAM

200 Area Source Chara. 200-CS-1 OU

Pr 12/3/01

DATA SHEETS
Page 1
SUMMARY DATA SECTION
Page 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 11/19/01

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1568

R111015-01

DATA SHEET, cont

B13C81

4	7131 Melissa C. Mannion	Client/Case no Contract	Hanford No. 630	SDG H1568
		Collected/Weight	B13C8I 200 East & West 10/30/01 08:30 921.5 B02-008-01 B02-0	<u>a</u>

ANALYTE	CAS NO	RESULT PCi/g	25 ERR (COUNT)	MDA pci/g	RDL pCi/g	QUALI- FIERS	TEST
Europium 155	14391-16-3	U		0.081	0.10	บ	GAM
Thorium 228	14274-82-9	0.954	0.041	0.036			GAM
Thorium 232	TH-232	1.11	0.15	0.13			GAM
Uranium 235	15117-96-1	υ		0.11		บ	GAM
Uranium 238	U-238	· 😈		3.9		ט	GAM
Americium 241	14596-10-2	U		0.099		U	GAM

200 Area Source Chara. 200-CS-1 OU

12/3/01

DATA SHEETS
Page 2
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Laboratory Narrative and Chain-of-Custody Documentation

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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1568 was composed of one solid (soil) sample designated under SAF No. B02-008 with a Project Designation of: 200 Area Source Characterization 200-CS-1 OU – Waste Management. SDG H1568 (7131) was batched with SDG H1575 (7130) per BHI's permission.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on November 17 and 19, 2001.

2.0 ANALYSIS NOTES

2.1 Gross Aipha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

The C-14 LCS percent recovery (83%) was below the 3 σ limits (86 to 114%), but within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analyses

No problems were encountered during the course of the reanalyses.

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

Page 2 of 2

2.9 Transplutonic Analyses (Am-241 and Cm-242)

Due to an oversight sample B13C81was originally only analyzed for Am-241 instead of Am-241 and Cm-242; thus there is only QC data for Am-241. SDG H1575 requested Am-241 only. The Am-241 LCS recovery was 97%. The Am-241 method blank result (0.00 \pm 0.053 pCi/g) was below the MDA (0.20 pCi/g). No other problems were encountered during the course of the analyses.

Gamma Spectroscopy Analyses 2.10

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melina Manno Melissa C. Mannion

Program Manager

Bechtel Hanford Inc.		HAIN OF CUS	TODY/S	AMPLI	E ANAL	YSIS I	REQUES'	r	Bo	2-008-01	Page 1	of 1
Collector Thomas, G/Weison, D		nny Comtact riock, CS	Telephot 372-9				Projeci Coordi IRENT, 8J	neter .	Price Code	AN IT	-Come Te	meround
Project Designation 200 Area Source Characterization 200-CS-1 OU - W	/aste Mana 200		H156	8(712	3/)		SAF No. B02-008		Air Quality	3 6	45) -45)	Days
Ice Chest No. GRC 96.030	D Plate I	ogbook No. EL-15	51	COA XL2002C	HOR	Þ	Aethod of Ship Fed Ex	ment				
Shipped To	Official	820005	14	109W 1489/01			2575	7-83	5184/4	19/30 /		
POSSIBLE SAMPLE HAZARDS/REMARKS	·	7 ., -	1								4	1
TIC TO B13684	ام د	Preservation	Меня	None	Cool 4C Cool 4C	Cool 4C Co	el Cool 4C Cool 4C	None	Coel 4C Coel 4C	1900		l
PT PT	r 11-1-01	Type of Container	40	•0	* Ø	aG	aG	₩G	90	.0		
Samples stored in Ref.# at the 3721 Shipping Facility on	3	No. of Container(s)	1	1	ì	1	1	1	1	1		
Collector not available to relinquish same on 11/01/31 for skipment.	ples	Velene	1000mL	500mil.	1000mL	1000mL	120mL	60mi	120 <u>m</u> L	120mL		
SAMPLE ANA	TANS		See Hem (1) in Special Instructions.	See hom (2) in Special Instructions	Special Special Management	Spe jam (4) Special James Series	in PCBn - 1002	pii (dail) -	9045 VOA - 8269A (TCL); VOA - 8269A (Add- On) (1- Proposel, 8thmpl)	Hydrazina - D(305		
Sample No. Matrix *	Sample Date	Sample Time										
B13C81 SOIL /	10/30/01	/ 0830/	X									
<u>}</u>	 						 -					
							-	····				
							1					
CHAIN OF POSSESSION	Sign/Print	Names			IAL INSTRI					······································		Matrix *
Rejustated By Reserved From Delottion 96	S REF. IA	BZ8848-1	0.3001	(1) Ger 154, Ber Comment	s Inboratory is to one Alpha; Geor propings-155); (e-848, Reditum-	s report both in Bets; Con Genum Spe 226, Radina	ema Speciroscopy o - Add-on (Amer s-228, Sodiam-22,	os rings ox (Cenium-1 (cium-241, Tin-126);	compound from W? 137, Cobelt-60, Bu , Antimony-125, B , Struntium-89,90 - no-132}; Annaicht	topiam-152, Be exists-133, Con - Total Sr, Carb	gropiera- juno-134, ion-14; ion-237;	p-dull SP-dulped SP-dulp SP-dulp W = Mar- O-OE A-AA DS-Dung-dulp
Relinquished By/Removed From Date/Time 1.7 Relinquished By/Removed From Date/Time Relinquished By/Removed From Date/Time	Received By/Mared Received By/Mared Received By/Mared	E. Strung Da		(C) X	P-Metale - 6010 etala <u>- 6010A (3</u> nesa - Melybeles Chryminan Hen 72/NO3 - 353 2 n - 9030; Asses	Simericaca A mea, Michai - 7196 - IC Anions mia 250.3	dd.Ox) (Alaminu ,Botunium, Sodiu - 300.0 (Chloride Tutal Openido - 0	n. Berylli n, Thallin Plantida, 010	ium, Chromium, I. nen. Binnell, Berr ne, Venellen, Bin Mitche, Mitche, Pl.	on, Caleium, Cu o); history ~ ? Supinso, Sulfat	Silver); sener, Iron 1477-	DE-Dron Ligalia 1-Villana 100-Wips 5-Kinda 1-Villanaina 20-Other
LABORATORY Received By SECTION			Tide							De	de/l'ima	
FINAL SAMPLE Disposal Method DISPOSITION	· · · · · · · · · · · · · · · · · · ·				Dispos	d By				De	ole/Times	

Appendix 5

Data Validation Supporting Documentation

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	Α	В	С	D	E
PROJECT: 20	20 -6 5 -		DATA PACKA	GE: #1568	,
VALIDATOR:	TLI	LAB: E	> .	DATE: 1/	29/01
CASE:			SDG:	H1548	
		ANALYSES	PERFORMED		
Gross Alpha/Beta	Detrontium-90	☐ Technetium-98	E-Alpha Spectroscopy	B Gamma Spectroscopy	
Total Uranium	☐ Redium-22	Edium	0		
SAMPLES/MATE	IX BI	308		50	./
					· · · · · · · · · · · · · · · · · · ·
1. Completen	ess				\\\\\Z\\\/A
•		ms nuosant?		Y0	/~ ·
		ms present?	• • • • •	Ye	s Nơ N/A
Comments:					
<u> </u>	· · · · · · · · · · · · · · · · · · ·				
·				A - 11 - 11 - 11 - 11 - 11 - 11 - 11 -	
2. Initial C	Calibration .				\(\overline{\text{Min/a}} \)
		hostad within			14.
one yea	ir of sample a	inalysis?		Ye	s No N/A
Initial calib	ration accept	able?		Ye	s No N/A
				Ye	•
Standards Exp	oired?	• • • • • • • •		Ye	es No N/A
Comments:					
				-	
					

-M000018

WHC-SD-EN-SPP-001, Rev. 1

3. Continuing Calibration	EXN/A
Calibration checked within one week of sample analysis? Yes	No N/A
Calibration check acceptable? Yes	•
Calibration check standards NIST traceable? Yes	
Calibration check standards expired? Yes	•
Comments:	•
Condition 1	
4. Blanks	
Method blank analyzed? Yes	
Method blank results acceptable?	
Analytes detected in method blank? Yes	
Field blank(s) analyzed? Yes	
Field blank results acceptable? Yes	
Analytes detected in field blank(s)? Yes	
Transcription/Calculation Errors? Yes	
Comments: eurium-242, Sodium-22, antimenj-125 - Cesium-134 Barium-133 Am-241(gen) -	712-124
Cesium-134 Barion-133 Am-241(gea) -	No blank
5. Matrix Spikes	🗆 N/A
Matrix spike analyzed? Yes	
Spike recoveries acceptable? Yes	
Spike source traceable? Yes	
Spike source expired? Yes	()
	(')
Transcription/Calculation Errors? Yes	No (RTA)
Comments: $C-14 - \nu \sigma M T$	

WHC-SD-EN-SPP-001, Rev. 1

6. Laboratory Control Samples
LCS recoveries acceptable? Yes No N/A LCS traceable?
Comments: Am 241 (gea) Curium -242 -NO LOS J
7. Chemical Recovery
Chemical carrier added? Yes No N/A Chemical recovery acceptable?
Transcription/Calculation errors? Yes No M/A Comments:
8. Duplicates

9		<i>[</i> `
	Field QC Samples	
F	ield duplicate sample(s) analyzed? Yes No	1
F	ield duplicate RPD values acceptable? Yes No	
F	ield split sample(s) analyzed? Yes No	1
F	ield split RPD values acceptable? Yes No	1
P	erformance audit sample(s) analyzed? Yes No	1
P	erformance audit sample results acceptable? Yes No	ı
C	omments:	
_		
10). Holding Times	
A	re sample holding times acceptable?	
C	omments:	
_		
	Docults and Detection Little (Land December 2)	
T.1		3
	sults reported for all required sample analyses? (es) No	
Re	sults supported in raw data? Yes No 1	(
Re	sults supported in raw data? Yes No (sults Acceptable?	
Re Re Ti	sults supported in raw data? Yes No (sults Acceptable?	
Re Re Ti MI	sults supported in raw data? Yes No (sults Acceptable?	(
Re Re Ti MI	sults supported in raw data? Yes No (sults Acceptable?	

Appendix 6 Additional Documentation Requested by Client

R111014-07

METHOD BLANK

Method Blank

3	7131 Melissa C. Mannion	Client/Case no Contract		SDG_H1568
Lab sample id Dept sample id		Client sample id Material/Matrix		SOLID
Debt sample 10	/130-007	-	B02-008	

ANALYTE	CAS NO	result pCi/g	2σ ERR (COUNT)	DCT/d MDY	RDL pCi/g	Quali- Fiers	Test
Gross Alpha	12587-46-1	-0.201	1.5	2.9	10	ט	93A
Gross Beta	12587-47-2	0.050	3.8	6.4	15	บ	93B
Total Strontium	SR-RAD	-0.092	0.13	0.30	1.0	U	SR
Americium 241	14596-10-2	N.A.			1.0		AM
Thorium 228	14274-82-9	0.333	0.53	0.89		ប	TH
Thorium 230	14269-63-7	0.133	0.40	0.64	1.0	ប	TH
Thorium 232	TH-232	0.133	0.13	0.51	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.003	0.10	U	U_T
Uranium 233	U-233/234	0.021	0.042	0.16	1.0	บ	ຫົ
Uranium 235	15117-96-1	0.025	0.051	0.19	1.0	บ	U
Uranium 238	U-238	0	0.042	0.16	1.0	U	ט
Neptunium 237	13994-20-2	-0.012	0.024	0.091	1.0	บ	NP
Plutonium 238	13981-16-3	0	0.062	0.24	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.062	0.24	1.0	U	PŪ
Potassium 40	13966-00-2	u		0.13		σ	GAM
Cobalt 60	10198-40-0	U		0.008	0.050	ប	GAM
Cesium 137	10045-97-3	ซ		0.008	0.10	ប	GAM
Radium 226	13982-63-3	Ü		0.017	0.10	ប	GAM
Radium 228	15262-20-1	U		0.037	0.20	ט	GAM
Europium 152	14683-23-9	ប		0.022	0.10	บ	GAM
Europium 154	15585-10-1	ਧ		0.028	0.10	ប	GAM
Europium 155	14391-16-3	ช		0.021	0.10	ช	GAM
Thorium 228	14274-82-9	บ		0.019		U	GAM
Thorium 232	TH-232	บ		0.037		U	GAM
Uranium 235	15117-96-1	บ		0.029		U	GAM
Uranium 238	U-238	ប		0.98		ט	GAN
Americium 241	14596-10-2	Ū		0.026		ซ	GAN

200 Area Source Chara. 200-CS-1 OU

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R111015-04

METHOD BLANK

Method Blank

	7131 Melissa C. Mannion	Client/Case no Contract	Hanford No. 630	SDG H1568
Lab sample id Dept sample id		Client sample id Material/Matrix SAF No		SOLID

ANALYTE	CAS NO	RESULT pCi/g	25 ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	Test
Carbon 14	14762-75-5	-0.331	2.9	4.9	50	บ	С

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QC-BLANK 40212

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R111014-06

LAB CONTROL SAMPLE

Lab Control Sample

SDG <u>7131</u>	Client/Case no <u>Hanford</u> <u>SDG H1568</u>
Contact <u>Melissa C. Mannion</u>	Case no <u>No. 630</u>
Lab sample id <u>R111014-06</u> Dept sample id <u>7130-006</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix

ANALYTE	RESULT pCi/g	2a ERR (COUNT)	MDA pci/g	ROL pCi/g	QUALI- FIERS	TEST	ADDED pC1/g	20 ERR pC1/g	REC %	30 LMTS (TOTAL)	
Gross Alpha	197	14	3.2	10		93A	200	8.0	98	68-132	70-130
Gross Beta	216	12	9.6	15		93B	218	8.7	99	75-125	70-130
Total Strontium	21.9	0.82	0.23	1.0		SR	21.5	0.56	102	83-117	50-120
Americium 241	N.A.			1.0		AH					80-120
Thorium 230	40.4	2.7	0.32	1.0		TH	40.8	1.6	99	86-114	80-120
Total Uranium (ug/g)	17.9	2.0	0.027	0.10		U_T	16.5	0.66	108	76-124	80-120
Uranium 233	17.5	1.7	0.91	1.0		U	18.6	0.74	94	83-117	80-120
Uranium 235	16.1	1.6	0.21	1.0		U	15.1	0.60	107	81-119	80-120
Urenium 238	19.1	1.8	0.87	1.0		u	20.2	0.81	95	84-116	80-120
Neptunium 237	18.7	0.78	0.053	1.0		NP	19.8	0.79	94	89-111	80-120
Plutonium 238	24.3	2.5	0.22	1.0		PU	24.6	0.98	99	82-118	80-120
Plutonium 239/240	26.7	2.7	0,22	1.0		PU	26.4	1.1	101	82-118	80-120
Cobelt 60	1.27	0.027	0.012	0.050		GAN	1.17	0,047	108	75-125	80-120
Cesium 137	1.51	0.025	0.015	0.10		GAM	1.35	0.054	112	74-126	80-120

200 Area Source Chara. 200-CS-1 QU

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OC-LCS 40207				

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R111015-03

LAB CONTROL SAMPLE

Lab Control Sample

SDG <u>7131</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford SDG H1568</u> Case no <u>No. 630</u>
Lab sample id <u>R111015-03</u> Dept sample id <u>7131-003</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix
	SAF No <u>BO2-008</u>

ANALYTE	RESULT pCf/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCf/g	GUALI- FIERS	TEST		2σ ERR pCi/g		30 LMTS (TOTAL)	
Carbon 14	9390	94	12	50		С	11300	450	_83	86-114	80-120

200 Area Source Chara, 200-CS-1 OU

QC-LCS	40211			•	

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R111015-02

DUPLICATE

B13C81

SDG <u>7131</u> Contact <u>Helissa C. Mannion</u>		Client/Case no <u>Henford</u> SDG H1568 Case no <u>No. 630</u>
DUPLICATE	ORIGINAL	
Lab sample id R111015-02	Lab sample id <u>R111015-01</u>	Client sample id <u>B13C81</u>
Dept sample id <u>7131-002</u>	Dept sample id <u>7131-001</u>	Location/Matrix 200 Fast & West SOLID
	Received 11/02/01	Collected/Weight 10/30/01 08:30 921.5 g
% solids 81.9	% solids 81.9	Custody/SAF No 802-008-01 802-008

ANALYTE	DUPLICATE pCi/g	2ø ERR (COUNT)	MOA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pC1/g	2# ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3ø PRO
Gross Alpha	8.66	3.8	4.1	10	j	93A	9.54	3.8	3.7	3	10	98
Gross Beta	21.7	5.7	8.0	15		93B	18.3	6.2	9.2		17	71
Carbon 14	-0.345	2.7	4.6	50	U	c	-0.983	2.7	4.7	U	-	
Total Strontium	-0.026	0.13	0.27	1.0	U	SR	-0.058	0.14	0.28	U	•	
Thorium 228	0.718	0.48	0.57			TH	0.796	0.67	0.89	U	10	164
Thorium 230	0.596	0.60	0.73	1.0	น	TH	0.660	0.53	0.63	J	10	192
Thorium 232	1.31	0.60	0.46	1.0		TH	0.991	0.53	0.51	J	28	105
Total Uranium (ug/g)	2.24	0.30	0.27	0.10		U_T	2.76	0.35	0.27		21	34
Uranium 233	0.824	0.23	0.17	1.0	J	ษ	0.774	0.26	0.16	j	6	66
Urenium 235	0.241	0.14	0.13	1.0	j	Ų	0.026	0.052	0.20	บ	161	168
Uranium 238	0.596	0.20	0.14	1.0	J	U	0.495	0.22	0.16	J	19	82
Neptunium 237	G	0.059	0.088	1.0	u	NP	0.028	0.056	0.11	U	-	
Piutonium 238	0	0.064	0.24	1.0	Ų	PÜ	0	0.070	0.27	U	-	
Plutonium 239/240	0	0.064	0.24	1.0	U	PU	0	0.070	0.27	U	-	
Curium 242	0	0.049	0.19		U	TP	0	0.052	0.20	υ	-	
Americium 241	0.047	0.093	0.18	1.0	u	TP	0.025	0.049	0.19	U	-	
Sodium 22	U		0.035		U	GAN	U		0.036	U	-	
Antimony 125	u		0.065		U	GAM	U		0.061	U	-	
Potessium 40	16.3	0.71	0.32			GAM	16.0	0.67	0.30		2	33
Tin 126	u		0.087		บ	GAM	U		0.065	U	•	
Cobalt 60	Ü		0.033	0.050	u	GAM	U		0.033	ប	-	
Barium 133	บ		0.030		- U	GAM	U		0.032	U	-	
Cesium 134	Ü		0.039		Ü	GAM	U		0.050	U	-	
Cesium 137	u		0.030		u	GAM	u		0.027	υ	-	
Redium 226	0.879	0.068	0.060		-	GAM	0.78	0.061	0.050		11	36
Radium 228	1.04	0.14	0.14	0.20		GAM	1	0.15	0.13		7	43
Europium 152	U	40.17	0.074		U	GAM	1		0.062	u	-	
Europium 152 Europium 154	U		0.10	0.10	u	GAM	_		0.11	บ		

200 Area Source Chara. 200-CS-1 OU

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R111015-02

DUPLICATE, cont.

B13C81

SDG <u>7131</u> Contact <u>Melissa C. Mannion</u>		Client/Case no <u>Hanford</u> <u>SDG H1568</u> Case no <u>No. 630</u>
DUPLICATE	ORIGINAL	
Lab sample id <u>R111015-02</u>	Lab mample id <u>R111015-01</u>	Client sample id 813081
Dept sample id 7131-002	Dept sample id <u>7131-001</u>	Location/Matrix 200 East & West SOLID
Ì	Received <u>11/02/01</u>	Collected/Weight 10/30/01 08:30 921.5 g
% solids <u>81,9</u>	% solids <u>81.9</u>	Custody/SAF No 802-008-01 802-008

ANALYTE	DUPLICATE pC1/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	GUALI- FIERS	TEST	ORIGINAL pCi/g	2a ERR (COUNT)	MDA pCi/g	QUAL1- FIERS	RPD %	3ø PRO TOT LINI
Europium 155	บ		_0.19	0.10	U	GAM	U	· · ·	0.081	บ	•	
Thorium 228	0.999	0.042	0.041			GAM	0.954	0.041	0.036		5	33
Thorium 232	1.04	0.14	0.14			GAM	1.11	0.15	0.13		7	43
Uranium 235	U		0.13		U	GAM	ប		0.11	ប	•	
Uranium 238	ប		3.9		U	GAM	U		3.9	U	-	
Americium 241	U		0.24		U	GAM	U		0.099	u	•	

200 Area Source Chara. 200-CS-1 OU

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Version 3.06
Report date 11/19/01

Date: 6 De

6 December 2001

To:

Bechtel Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

200 Area Source Characterization 200-CS-1 Operable Unit - Waste

Management

Subject:

Volatile - Data Package No. H1568-LLI (SDG No. H1568)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1568-LLI prepared by Lionville Laboratory, Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Antilysis
B13C81	10/30/01	Soil	С	Volatiles by 8260A

Data validation was conducted in accordance with the BHI validation statement of work and the Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, BHI-01562, Rev. 0, October 2001. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times are assessed to ascertain whether the holding time requirements were met by the laboratory. Preserved water samples must be analyzed within 14 days of the date of sample collection for VOAs. If holding times are exceeded, but not by greater than twice the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than twice the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples of a given matrix. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the project quantitation limit (PQL) and is less than five times (or less than ten times for laboratory contaminants) the highest associated blank result, the sample result value is raised to the PQL, qualified as undetected and flagged "U".

Due to method blank contamination, the methylene chloride result was qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

Accuracy

Matrix Spike/Matrix Spike Duplicate Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using the target compounds for which percent recoveries must be within established laboratory quality control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike/matrix spike duplicate recovery results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of system performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory program. When a surrogate compound recovery is out of the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Undetected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Samples with surrogate recoveries less than ten percent are qualified as estimates and flagged "J" for detects, and rejected and flagged "UR" for nondetects. Undetected compounds with surrogate recoveries greater than the upper control limit require no qualification. Surrogates are not required for formaldehyde analysis.

All surrogate recovery results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For samples analyzed using SW-846 protocol, results must be within RPD limits of +/-35% for solid samples. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the *Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211*, October 2001 PQLs to ensure that laboratory detection levels meet the required criteria. All undetected analytes had reported analytical detection levels above the analyte specific PQL. Under the BHI validation SOW, no qualification is required.

Completeness

Data package No. H1568-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to laboratory blank contamination, all methylene chloride results were qualified as undetected and flagged "U".

All undetected had reported analytical detection levels above the analyte specific PQL. Under the BHI validation SOW, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validator in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1568	REVIEWER: TLI	DATE: 12/6/01	PAGE_1_0F_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U	All	Blank comtamination

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

n				1											
Project: BECHTEL-HANFORD				ł											
Laboratory: LLI	SDG: H1	E00		1											
Case:	SDG: HT	B13C81	-			1		Г		ī]	\neg
Sample Number		B13C81						 						<u></u>	\dashv
Remarks		40100104		 		<u> </u>		ļ							
Sample Data		10/30/01						ļ		-					
Analysis Date	Tana.	11/10/01	<u> </u>	<u> </u>	T	<u> </u>	<u></u>	0 1	<u>. </u>	5 4	T	D	a	D	┰┤
VOA	CROL		<u>a</u>	Result	Q	Result	a	Result	Q	Result	<u> </u>	Result	u	Result	<u>a</u>
Chloromethans	10				 		 				-				$\vdash \vdash \vdash$
Bromomethane	10			<u></u>			<u> </u>		 		├		_		├┤
Vinyl Chloride	10				┢		—		<u> </u>		├		├		₩
Chloroethane	10	· · · · · · · · · · · · · · · · · · ·		ļ			-		<u> </u>	 	├		 		├
Methylene Chloride	5				-	ļ	-			 	 		\vdash		╀─┤
Acetone	20		_		 	}	┡				ļ		\vdash	<u> </u>	┼╌┤
Carbon Disulfide	<u> </u>		U	<u> </u>	₩		 		<u> </u>		 			 	┼
1,1-Dichloroethene	10		U				<u> </u>		⊢						├
1,1-Dichloroethane	10				-		 				-		-		\vdash
1,2-Dichloroethene (total)	5		_	ļ			 		├		 				┼╌┤
Chiloroform	5		U			ļ			<u> </u>		<u> </u>				\vdash
1,2-Dichloroethane	5		U		ļ		<u> </u>		├		ļ				$\vdash\vdash\vdash$
2-Butanona	10		U				├				├—				
71,1,1-Trichioroethane	. 5		U				 		<u> </u>				<u> </u>	<u> </u>	
Carbon Tetrachiorida	5		U			 	<u> </u>				ļ		 - -		
Bromodichloromethane	5		U				<u> </u>				<u> </u>		├		\vdash
,2-Dichloropropane	5	6	Ų.			ļ	!		├		<u> </u>		<u> </u>	<u> </u>	╁─┤
Gis-1,3-Dichloropropene	5	<u> </u>	U		↓		ļ		ļ		├─-		ļ		₩
Prichloroethene	5		U	<u> </u>			ļ		<u> </u>		ļ		<u> </u>		-
Dibromochioromethane	5		U		<u> </u>		ļ			ļ			ļ		╀
1,1,2-Trichloroethane	5	· ·	U		<u> </u>								<u> </u>		├ ──
Benzene		6					ļ						<u> </u>		₩
trans-1,3-Dichloropropens	5		U				ļ				ļ		<u> </u>		\vdash
Bromoform	5		U		ļ								<u> </u>		\vdash
4-Methyl-2-pentanone		12			<u> </u>						ļ		<u> </u>		┝
2-Hexanone		12	U							·	<u> </u>		┡	<u> </u>	↓
Tetrachierosthene	5	8	U								<u> </u>		<u> </u>		╀╌┤
1,1,2,2-Tetrachioroethane	5	<u> </u>	υ		<u> </u>						<u> </u>		ļ	<u> </u>	├ ─┤
Taluene	5	в	U				ļ		<u> </u>				 		Щ
Chiorobenzene	5	в	U				<u> </u>						ļ		₩
Ethylbergene		6	υ								 				╙
Styrene		6	U						L		ļ				Щ
Xylenes (total)	5	6	U										<u> </u>		┷
	1														┷

Lionville Laboratory, Inc. Volatiles by GC/MS, HSL List

Volatiles by GC/MS, HSL List Report Date: 11/21/01 14:01 RFW Batch Number: 0111L256 Client: THU-HANFORD B02-008 Work Order: 11343606001 Page: 18

C	ust ID:	B13C8	1	B13C	1	B13C8	1	B13CK	9	B13CK9	VBLKYQ	
Sample	RPW#:	00	1	001)	18	001 MS	D	00	2	002	01LVH475-	MB1
Information	Matrix:	SOIL	ı	SOII	1	SOIL	ı	SOIL		SOIL	SOIL	
	D.F.:	0.9	80	1.	02	0.9	62	1.	00	1.04	1.	
-	Units:	ug/	Kg	ug/	Kg	ug/	Kg	ug/	Kg	ug/Kg	ug/	
	uene-d8									REPREP		
		105	*	98	*	98	*	145	•	152 * *	106	*
Surrogate Bromofluoro		83	*	84	*	81	*	66	*	69 🚼	92	*
Recovery 1,2-Dichloroet		88 	* ==fl===	77 ======	* ==fl=:	80	*	116	ł	135 % ************************************	102	*
Chloromethane		12	 U	12	_==:T=:	12		15	ET:	16 U	.=======: 10	==fl U
Bromomethane		12	Ū	12	ซ	12	ū	15	ט	16 U	10	U
Vinyl Chloride		12	ีย	12	Ū	12	Ū	15	ij	16 U	10	บ
Chloroethane		12	U,	12	Ü	12	U	15	ū	16 0	10	n
Methylene Chloride		12	Z/U	12	В	12	В	65	В	78 B	7	•
Acetone		12	ับ	12	Ū	12	U	15	U	16 U	10	ប
Carbon Disulfide		6	U	6	Ü.	-6	D	8	Ü	8 U	- 5	U
1.1-Dichloroethene		6	Ū	76	*	78	*	. 8	Ü	8 17	5	Ü
=		6	ט	6	U	6	U	8	ซ	8 17	5	tī
1,1-Dichloroethane 1,2-Dichloroethene (total) 1.Chloroform		6	U	6	Ū	6	Ū	8	ū	8 U	5	11
AChloroform		6	U	6	υ	6	U	8	ū	a U	5	Ū
1,2-Dichloroethane		6	U	6	ע	6	U	12	-	13	5	U
2-Butanone		12	U	12	U	12	Ū	15	Ü	16 U	10	Ū
1,1,1-Trichloroethane		6	ซ	6	U	6	U	8	Ū	8 0	5	Ü
Carbon Tetrachloride		6	U	6	U	6	Ū	8	U	8 0	5	Ū
Bromodichloromethane		6	U	6	U	6	U	8	ט	U 8	5	Ū
1,2-Dichloropropane		6	Ü	6	U	6	U	8	U	8 TJ	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	Ø	8	U	8 U	5	U
Trichloroethene		6	บ	102	ł	105	*	8	U	8 U	5	σ
Dibromochloromethane		6	U	6	บ	6	U	8	Ü	6 U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	8	บ	8 U	5	U
Renzene		6	U	92	ŧ	96	¥	8	U	8 U	5	U
Trans-1,3-Dichloropropene_		6	U	6	U	6	ט	В	ט	8 U	5	Ū
Bromoform		₹ 6	U	6	υ	6	U	8	U	8 0	5	ū
4-Methyl-2-pentanone		12	U	12	U	12	Ū	15	Ū	16 U	10	Ü
2-Hexanone		<u> </u>	บ	12	U	12	Ū	15	U	16 U	10	Ū
Tetrachloroethene		6 6	U	6	U	6	Ū	7	J	6 J	5	บ
1,1,2,2-Tetrachloroethane		L 6	U	6	ט	6	Ū	8	Ü	8 U	5	Ü
Toluene		2 6	U	100	*	102	*	8	บ	8 U	5	σ
*= Outside of BPA CLP QC li	mits.	_ ,				_		_	-		•	-

RPW Batch Number:	0111L256 Clie	ent: TNU-HAMP	ORD B02-008	Work Order:	11343606001	Page: 1b	
	Cust ID:	B13C81	B13C81	B13C81	B13CK9	B13CK9	ABTKAÖ /
	RPW#:	001	001 MS	001 MSD	002	002 REPREP	01LVH475-MB1
Chlorobenzene		6 U	98 🕻	101	8 U	8 U	5 U
Bthylbenzene		6 U	6 U	ช 3	8 U	8 U	5 U
Styrene		6 บ	6 U	6 U	8 U	8 U	5 Ü
Xylene (total)		6 U	6 U	6 U	8 U	8 U	5 U

^{*=} Outside of EPA CLP QC limits.

at 2 ste

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Client: TNU-HANFORD B02-008

LVL #: 0111L256

SDG/SAF #: H1568, H1571/B02-008

W.O. #: 11343-606-001-9999-00

Date Received: 11-02-2001

GC/MS VOLATILE

Two (2) water samples were collected on 10-30,31-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 11-10,12-2001.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
- 2. Samples were analyzed within required holding time.
- 3. Non-target compounds were not detected in the samples.
- 4. Two (2) of twenty-seven (27) surrogate recoveries were outside EPA QC limits. The out of criteria sample B13CK9 was reanalyzed on 11-12-2001 and reported.
- 5. All matrix spike recoveries were within EPA QC limits.
- 6. All blank spike recoveries were within EPA QC limits.
- 7. The method blanks contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL.
- 8. Internal standard area criteria were not met for sample B13CK9. The out of criteria sample B13CK9 was reanalyzed on 11-12-2001 and reported.
- 9. A spectral search was performed for Decane; however, it was not detected in the samples.
- 10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

V. Michael Taylor

rresident

Lionville Laboratory Incorporated

som\group\data\voe\tnu-henford\0111-256.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1.7 pages.

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015	Banple analysis			To the second						÷]]			
Sample No.	Metrix	Sungle Date											
B13C81	SOIL.	10/05/01	0830		×	×	×	×	×	X	4	Ì	
						1							
CHAIN OF POSSESSION	TON	Sign/Frint Nam	9	1			CTIONS	9, 9		7,4			Matrix
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各	1000 TO 1000	21-21-2	-	Dee/Time		mr-242, Kaguza-4 11 kminer, katapi sia Jenius		10.30.0	-	TD). Assertion	201.Ng	5	or the same of the
1	102 July		9	Destine Sroo local	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	(2) ICP Metels - 6010A (Separto ICP Metels - 6010A (Separtons / Monance, Methylenes, Niddel) (Armit, Bar LOs) (Abanto Stanies, Sofie	aic, Barinas, Cadarius, Chrom Abanteau, Barylinas, Bienre a, Sodiaes, Thalliers, Vendio	, Chromine, I , Biennet, Bor Venefium, Zie	co) (Arrenia, Barisas, Cadariem, Chromium, Land, Scientem, Kilver); Ad.Ca) (Alaminum, Baryllium, Bierselt, Bores, Calcient, Capper, Ivo Polanium, Sodium, Thellien, Venedium, Zine); Merzery - 7471 -		10 mm
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FINAL SAMPLE Disposed Method DISPOSETTION	Method						4				Δ	Deta/Time	
PUL EE 014 40000													



Lionville Laboratory, Inc. VOA ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008

DATE RECEIVED: 11/02/01 LVL LOT # :0111L256

CLIENT ID	LVL #	мтх	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13C81	001	s	01LVH475	10/30/01	N/A	11/10/01
B13C81	001 MS	S	01LVH475	10/30/01	N/A	11/10/01
B13C81	001 MSD	s	01LVH475	10/30/01	N/A	11/10/01
B13CK9	002	S	01LVH475	10/31/01	N/A	11/10/01
B13CK9	002 R1	s	01LVH478	10/31/01	N/A	11/12/01
LAB QC:						
VBL						
VBLKYQ	MB1	s	01LVH475	n/a	N/A	11/10/01
VBLKYQ	MB1 BS	s	01LVH475	N/A	N/A	11/10/01
VBLKZG	MB1	s	01LVH478	N/A	N/A	11/12/01
VBLKZG	MB1 BS	S	01LVH478	N/A	N/A	11/12/01

Appendix 5

Data Validation Supporting Documentation

WHC-SD-EN-SPP-002, Rev. 2

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	Α	В	(c)	D	Ε
	200-05-1		DATA PACKAG	E: HISG	4
VALIDATOR:	TU	LAB: LL	T T		100
CASE:			SDG:	HISC8	
		ANALYSES	PERFORMED		
CLP Volatiles	(gap column)	SW-846 8260 (packed column)	CLP Semivoletiles	SW-646 8270 (csp column)	SW-846 (packed column)
	6				
SAMPLES/MATE	RIX BIS	C81		Soil	
	•				
Is technical	verification rrative prese	MESS AND CASE documentation	n present? .		Yes No N/
	<u> </u>		·		
				<u> </u>	
2. HOLDING	TIMES				
		acceptable?		//	Yes No N
Comments:					
					

000018

WHC-SD-EN-SPP-002, Rev. 2

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION		\wedge
Is the GC/MS tuning/performance check acceptable? Yes	No	h/A
Are initial calibrations acceptable? Yes	No	N/A
Are continuing calibrations acceptable? Yes	No	W/A
Comments:		$\stackrel{\smile}{-}$
4. BLANKS		
Were laboratory blanks analyzed?	No	N/A
Are laboratory blank results acceptable? Yes	NO	N/A
Were field/trip blanks analyzed? Yes	OM .	N/A
Are field/trip blank results acceptable? Yes	No	(N/A
Comments: mestylen Chlorid - Uall		
·		
5. ACCURACY		
Were surrogates/System Monitoring Compounds analyzed? Yes	No	N/A
Are surrogate/System Monitoring Compound recoveries acceptable: Yes	No	N/A
Were MS/MSD samples analyzed?	No	N/A
Are MS/MSD results acceptable? Yes	No	N/A
Comments:		·

000019 A-2

WHC-SD-EN-SPP-002, Rev. 2

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION	
Are MS/MSD RPD values acceptable? (Yes)	No N/A
Are field duplicate RPD values acceptable? Yes	No (N/A)
Are field split RPD values acceptable? Yes	No (N/A
Comments:	
7. SYSTEM PERFORMANCE	
Were internal standards analyzed? Yes	No ATA
	No N/A
Are internal standard areas acceptable? Yes	No N/A
Are internal standard retention times acceptable? Yes	10 (17/7)
Comments:	
· · · · · · · · · · · · · · · · · · ·	
8. COMPOUND IDENTIFICATION AND QUANTITATION	
Is compound identification acceptable? Yes	No N/A
Is compound quantitation acceptable? Yes	No N/A
Comments:	
	
9. REPORTED RESULTS AND QUANTITATION LIMITS	<u> </u>
Are results reported for all requested analyses? Yes	No N/A
Are all results supported in the raw data? Yes	
Do results meet the CRQLs? Yes	\sim
Has the laboratory properly identified and coded all TIC? Yes	
Comments: all undette are	
Cottanettes.	

Date: 6 December 2001

To: Bechtel Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: 200 Area Source Characterization 200-CS-1 Operable Unit - Waste

Management

Subject: PCB - Data Package No. H1568-LLI (SDG No. H1568)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1568-LLI prepared by Lionville Laboratory, Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B13C81	10/30/01	Soil	С	PCBs by 8082

Data validation was conducted in accordance with the BHI validation statement of work and the *Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211*, BHI-01562, Rev. 0, October 2001. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times for PCB analysis is assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements is 14 days to extraction and 40 days for analysis.

All holding times were acceptable.

Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than project quantitation limit (PQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than PQL, the result is qualified as undetected and elevated to the PQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

Accuracy

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike analyses are performed in duplicate and must be within control limits of 50% to 150%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Nondetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike recovery results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Nondetected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated

detection limit and flagged "UJ". Nondetected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate recovery results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-35%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All MS/MSD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001 PQLs to ensure that laboratory detection levels meet the required criteria. All PCB results exceeded the PQL. Under the BHI statement of work, no qualification is required.

Completeness

Data package No. H1568-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

All PCB results exceeded the PQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01562, Rev. 0, Sampling and Analysis Instruction for the 216-A-29 Ditch for Project W-211, October 2001.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1568	REVIEWER: TLI	DATE: 12/6/01	PAGE_1_0F_1_					
COMMENTS: No qualifiers assigned.								

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD		·		1											
Laboratory: Lionville Laborator	ĺ														
Case:	SDG: H	1568		1											
Sample Number		B13C81													
Remarks							•					T			
Sample Date		10/30/01													
Extraction Date		11/5/01										L			
Analysis Date		11/10/01													
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Lionville Laboratory, Inc.

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RFW Batch Nu	mber: 0111L256	Client:	TNU-	HAMFORD B	02-008	М	ork O	rder: 113	4360	06001 Page		L_	ľ
	Cust ID:	B13C8	1	B13C8	1	B13C8	1	B13CK	9	PBLKVD		PBLKVD BS	3
Sample	RFW#:	00	1	001 M	B	001 MS1	5	002	2	01L#1330-	KB1	01LE1330-	MB
Information	Matrix:	SOIL	ı	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.	00	1.0	00	1.00		50.	. 0	1.0	00		00
	Units:	UG/KG		UG/1	KG	UG/1	KG	UG/I	(G	UG/	KG	UG/	
Surrogate:	Tetrachloro-m-xylene	85	*	68	ŧ	62	*	D	*	92		95	
	Decachlorobiphenyl	84	*	82	*	92	ŧ	D	*	91	*	93	1
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Aroclor-1242_		40 40	U	40 40	U U	40 40	U U	2600	ū	33	U	33	
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ample	RFW#: 0	1LE1330-1	1 81		12/3/								
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	D.F.:	1.0	0		<u> </u>	- /							
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urrogate:	Tetrachloro-m-xylene	92	*										
•	Decachlorobiphenyl	90	*										
roclor-1016	****************	**************************************	=f1== U	* 2 2 2 4 2 2 2 2 2 2	efl===	*******	*fl*=	E=\$2#7##21	-fl-	岩井工工岩井井三井田	=fl=	*****	-f
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roclor-1254_ roclor-1254		81 81	*										

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. *= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU HANFORD B02-008

LVL#: 0111L256

SDG/SAF#: H1568/H1571/B02-008

W.O.#: 11343-606-001-9999-00 Date Received: 11-02-01

PCB

The set of samples consisted of two (2) soil samples collected on 10-30,31-01.

The samples and their associated QC samples were extracted on 11-05-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-09,10,12-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All cooler temperatures have been recorded on the chain-of-custody.
- All required holding times for extraction and analysis have been met.
- 3. The samples and their associated QC samples received a sulfuric acid and a sulfur cleanup.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All obtainable surrogate recoveries were within acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. Sample B13CK9 required a fifty-fold instrument dilution due to the high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
- All initial calibrations associated with this data set were within acceptance criteria.
- 10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

lain Vaniels

Deputy Laboratory Manager

Lionville Laboratory Incorporated

pef\r:\group\data\peat\11L-256.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.



Lionville Laboratory, Inc. PCB ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B02-008 H\568 H157\

DATE RECEIVED: 11/02/01

LVL LOT # :0111L256

CLIENT ID	LVL	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
•							
B13C81	001		S	01LE1330	10/30/01	11/05/01	11/10/01
B13C81	001	MS	s	01LE1330	10/30/01	11/05/01	11/10/01
B13C81	001	MSD	S	01LE1330	10/30/01	11/05/01	11/10/01
B13CK9	002		8	01LB1330	10/31/01	11/05/01	11/12/01
LAB QC:							
							
PBLKVD	MB1		s	01LE1330	n/A	11/05/01	11/09/01
PBLKVD	MB1	BS	s	01LE1330	n/a	11/05/01	11/09/01
PBLKVD	MB1	BSD	S	01LE1330	n/a	11/05/01	11/09/01

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Data Validation Supporting Documentation

WHC-SD-EN-SPP-002, Rev. 2

PESTICIDE/PCB DATA VALIDATION CHECKLIST

PROJECT: 200 VALIDATOR: †L CASE: CASE: DATA PACKAGE Is technical ver Is a case narrat Comments:	COMPLETE ification ive prese	NESS AND	CASE	n present?	DATE: HISG &		es No	N/A N/A
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2. HOLDING TIME	:S		-					
Are sample holdi Comments:						· · (·)	res No	N/A
3. INSTRUMENT I 3.1 INSTRUMENT Are DDT retention Are calibration	PERFORMANO PERFORMAN on times (CE AND CA	ALIBR/ HOD 80	ATIONS D80 AND 800			Yes No	o /N/

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WHC-SD-EN-SPP-002, Rev. 2

PESTICIDE/PCB DATA VALIDATION CHECKLIST

Are retention times acceptable in the PEMs, INDA and INDB mixes? Ye Are RPD values in the PEMs acceptable? Ye	s No (N/A
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Wie Win Animes in energing acceptance.	1 L
Are the DDT and endrin breakdowns acceptable? Ye	
Was GPC cleanup performed? Ye	, j
Is the GPC calibration check acceptable? Ye	1 .
Was Florisil cleanup performed? Ye	· ·
Is the Florisil performance check acceptable? Ye	
Comments:	
Commences	
4. BLANKS	
Were laboratory blanks analyzed?	es No N/
Are laboratory blank results acceptable? Yo	
Were field/trip blanks analyzed?	
Are field/trip blank results acceptable? Younnents:	es No (N)
Were surrogates analyzed?	es No N,
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WHC-SD-EN-SPP-002, Rev. 2

PESTICIDE/PCB DATA VALIDATION CHECKLIST

6. PRECISION	
Are MS/MSD RPD values acceptable? Yes	No N/A
Are laboratory duplicate results acceptable?	No N/A
Are field duplicate RPD values acceptable? Yes	BY (IV)
Are field split RPD values acceptable? Yes	N/A)
Comments:	
7. SYSTEM PERFORMANCE	W (W)
Is chromatographic performance acceptable? Yes	No (N/A)
Are positive results resolved acceptably? Yes Comments:	110 / (11/14)
8. COMPOUND IDENTIFICATION AND QUANTITATION Is compound identification acceptable? Yes Is compound quantitation acceptable? Yes Comments:	No N/A
9. REPORTED RESULTS AND QUANTITATION LIMITS	
Are results reported for all requested analyses? Yes	No NA
Are all results supported in the raw data? Yes	No (N/A
Do results meet the CRQLs? Yes Comments:	(No) N/A

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